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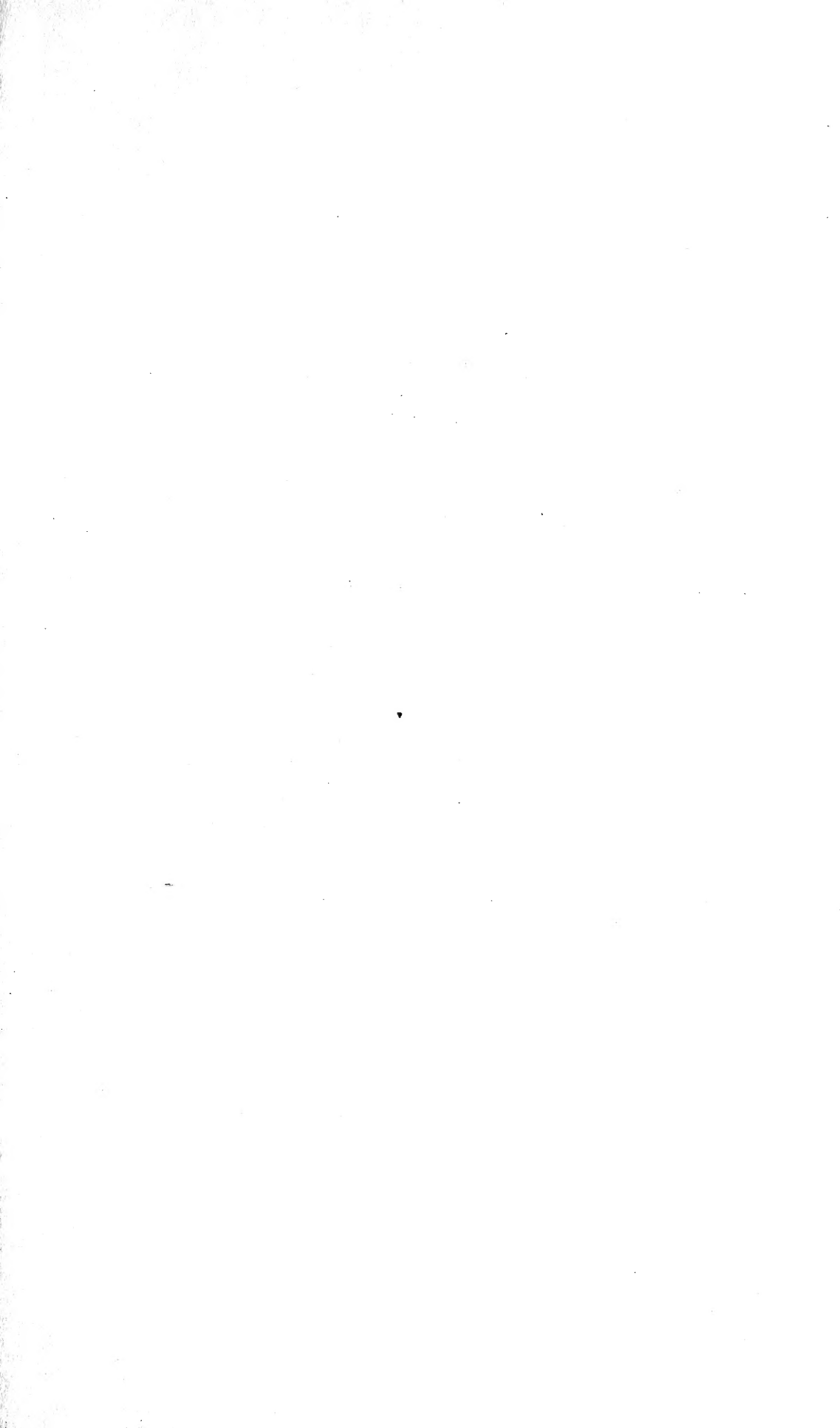
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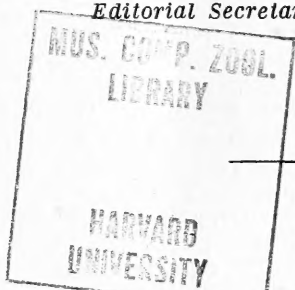
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CONTENTS OF VOLUME LX.

By HY. J. TURNER, F.R.E.S., F.R.H.S.

Auction Sale, II, in London, of Varieties of British Butterflies, L. H. Newman	8	Day's Collecting at Athi River, Kenya Colony, A. D. G. Sevastopulo	97
Aberrations of British Macrolepidoptera, E. A. Cockayne,	9, 24	Diptera	38, 56, 70, 100, 101, 107, 108
Abnormal Emergence, M. Chalmers-Hunt	66	Discrepancy of Sex in recorded captures of <i>V. zonaria</i> , H. W. Andrews	116
<i>Aplasta ononaria</i> Colonies, N. D. Riley	75	Distasteful Spiders of <i>Stenotarsus</i> (Col.), G. H. Lowe	22
Attempt to rear <i>H. rectilinea</i> , J. W. Heslop Harrison	76	Early Stages of Palaearctic Lepidoptera, E. P. Wiltshire	1
An Appeal, Wm. Fassnidge	91	Early Appearance of <i>L. camilla</i> , C. B. Antram	101
Are Ants Attracted by Bright Colours? Malcolm Burr	95	Early Appearances	125
<i>Argynnis</i> in Swanage, Leonard Tatchell	100	Field Notes from Anatolia, M. Burr	10, 71, 103, 112
Abundance and Scarcity of <i>Rhingia campestris</i> (Dipt.), B. R. Laurence	100	Forced Rearing of <i>Erebia blandina</i> (<i>aelhiops</i>), T. D. Fearnough	39
Ants	59, 65, 95	Four Notes on Diptera, J. E. Collin	50
Broods, Extra, S. H. Blathwayt	22	Foraging Space of Ants in Greece, W. Pickles	59
Butterfly Collecting in Wood Walton, Hunts, Chiltern Hills, and Royston, 1947, H. A. Leeds	33, 41	Foodplant of <i>T. turfosalis</i> , P. B. M. Allan	77
Butterfly Collecting in 1947, H. John Turner	35	Foodplants of the China-Mark Moth, <i>H. nymphaeata</i> , J. W. Heslop Harrison	76
Butterfly Collecting in Balcombe and East Sussex, R. J. R. Levett	95	"Genitalia Species," Hy. J. T.	109
Butterflies of the N. Forest Area, C. B. Antram	192	Hereditary Form of <i>Spilosoma lutea</i> , B. J. Lempke	4
Butterfly Haunts, A Review, Hy. J. T.	126	<i>Heodes phlaeas</i> , Aberration, T. D. Fearnough	100
Belated Larvae of the Poplar Hawk Moth, W. J. Finnigan	108	Humming of <i>R. campestris</i> , The. L. Parmenter	124
Collecting Notes ... 5, 21, 38, 50, 66, 74, 75, 92, 100, 107, 115, 124		Increase in Hebridean Lepidopterous Populations, J. W. Heslop Harrison	46
Current Notes ... 5, 39, 54, 67, 75, 76, 94, 101, 108, 117, 125		Lepidoptera in West Sussex, 1947, Com. G. W. Harper	28
Corrections, Errors	7, 40	Longicorn Coleoptera of Wales, Second Supplement of the, R. U. Kaufmann	69
Collecting in W. Surrey, 1947, Col. V. R. Burkhardt	20, 25	Lepidoptera at Bickenhall, Somerset, A. H. Turner	92
<i>C. croceus</i> and <i>N. polychloros</i> at Swanage, L. Tatchell	66	Localities: Anatolia, 10, 71, 112; Ankara, 103; Blandford, 36; Brockenhurst, 36; Boz Dag, 71; Bickenhall, 92; Balcombe, 95; Bedfordshire, 100; Braunton, 117; Cyprus, 1, 79; Cheam, 22; Chiltern Hills, 33, 41; Calabria, 58; Cuenea, 58; Dorset, 37; Deal, 116; Devon, 118; East Sussex, 95; Formia, 57; Greece, 59; Hebrides, 111; Italy, 57, 74; Kenya, 97; Lisbon, 58; Melfi, 57; Mt. Vulture, 57; Middle East, 79; Midlands, 100; New Forest, 36, 122; Norfolk,	
Colour Variation in Pupae, <i>E. auri-nia</i> , T. D. Fearnough	88		
Critical Examination of the Section of a Check List of British Insects by Kloet & Hincks, dealing with the Chermidae or Psyllidae, G. Heslop Harrison	89		
<i>Cucullia absinthii</i> in the Midlands, G. B. Manly	100, 108		
Cyrtidae (Dipt.) in Bedfordshire, B. R. Laurence	101		
Coleoptera	23, 69		
<i>C. croceus</i> at Swanage, L. Tatchell ..	116		

6145
17-6

37: New Britain, 65: N. Devon.	Observations on Hy. J. T.'s Notes,
117: N. Somerset, 105; Piraeus, 59:	Orazio Querci
Royston, 33, 41; Reading, 44:	Obituary: Rev. George Wheeler, 55;
Rome, 57; Swanage, 37, 66, 100,	H. G. Jeffery, 68; Nikolai Yakov-
116; Sandro Dagb, 10, 71; Surrey,	levlievich Kuznetsov
W., 20, 25; Sussex, W., 28; Salis-	<i>Opomyza petrei</i> (Dipt.), L. Parmenter
bury, 37; Spain, 58; Somerset, 92:	Pairing of <i>A. c-nigrum</i> with <i>A. xan-</i>
Southampton, 115; Torquay, 21:	<i>thographa</i> , E. Barton White ...
Whitminster, 22; Wood Walton,	<i>Phalonia dipoltella</i> at Southampton,
33, 41; Wicken Fen, 37: Wales, 15,	Wm. Fassnidge
69, 118; Zonguldak	<i>Pieris napi</i> , ab. <i>rotunda</i> , N. T. East-
Lists of Flowers visited by <i>Rhingia</i>	ton
<i>campestris</i>	Preparing Sites for Brassicae and
Large Visitor to Sugar, A. T. D.	Rapae, F. D. Fearnough
Fearnough	<i>Plutella incarnatella</i> , W. Fassnidge
<i>M. stellatarum</i> in March, F. Barton	Reviews
White	6, 78, 92, 117
Middle East Lepidoptera, IX. Two	<i>Rhingia campestris</i> and <i>Syrphus bal-</i>
New Forms or Species and	<i>teatus</i> , H. W. Andrews
Thirty-five New Records from	<i>Rhingia campestris</i> (Dipt.), Syrphi-
Cyprus, E. P. Wiltshire	dae—A further Note, L. Parmen-
Museums	ter
119	119
Note on bred specimens of <i>Pegomyia</i>	Rare Dipteron, A. S. Wakely
(Dipt.), B. L. Parmenter ...	108
Notes on the Lepidoptera occurring	Surrey Helomyzidae (Dipt.), L. Par-
in the Reading District in 1947,	menter,
L. H. Williams	38, 54
44	<i>Syntormon macula</i> , Addition to the
Notes on <i>Satyrus</i> (Melanargia) and	British List, E. C. M. d'Assis-
<i>S. ines</i> , Orazio Querci	Fonseca
57	70
Notes on Migrants and Light in N.	<i>Selidosema plumaria</i> , R. tyronensis,
Somerset in 1947, J. F. Bird	E. A. Cockayne
105	79
New Genus and Species of Ant from	Striking Aberration of <i>C. croceus</i> ,
New Britain, A. H. Donisthorpe	K. H. Bobe
65	92
New Race of <i>C. pamphilus</i> from the	Scarcity of <i>Rhingia campestris</i> , B.
Hebrides, J. W. Heslop Harrison	Verdcourt
111	108
Notices (Special)	Transplanting of Local Insects, N.
75, 91, 117	D. Riley
Notes on <i>Ptinus Tectus</i> (Col.), H.	75, 117
Donisthorpe	The Verrall Supper
119	125
Oak Prominents, The, An Old Moth-	Unusual Food of <i>S. ligustri</i> , E. Bar-
hunter	ton White
15	117
	<i>Volucella zonaria</i> , C. M. Gummer
	116
	Winter Lepidoptera at Cheam, H. A.
	Morrell
	22

LIST OF CONTRIBUTORS.

d'Assis-Fonseca, E. C. M.	70	Fassnidge, W., M.A., F.R.E.S. 76, 91, 115
Allan, P. B. M.	6, 22, 75	Finnigan, W. J.
Antram, C. B.	101	108
Andrews, H. W., F.R.E.S.	107, 116	Gummer, C. M.
Burr, Dr M., D.Sc., F.R.E.S. ...	10, 67,	116
71, 95, 102, 103, 112		Harper, Commander G. W., R.N.,
Blathwayt, C. S. H.	22	F.R.E.S.
Burkhardt, Col. V. R., D.S.O., O.B.E.	20, 25	28
Bobbe, K. H.	92	Harrison, J. W. Heslop, D.Sc., F.R.S.
Bird, J. F., F.R.E.S.	105	46, 76, 111
Cockayne, Dr E. A., M.A., F.R.C.P.,		Harrison, G. Heslop, B.Sc., Ph.D.,
F.R.E.S.	9, 79	F.R.S.E.
Collin, J. E., J.P., F.R.E.S.	50	89
Chalmers-Hunt, J. M.	66	Jefferson, J. W.
Donisthorpe, H. St J. K., F.R.E.S.,		5
F.Z.S.	65, 119	Jacobs, S. N. A.
Easton, N. T., D.F.H., F.R.E.S.	121	78
Fletcher, T. Bainbrigge, R.N., F.Z.S.,		Kaufmann, B. R. U.
F.L.S., F.R.E.S.	39	69
Fearnough, T. D. ...	23, 39, 88, 100, 124	Lempke, B. J.
		4
		Lowe, G. H.
		22
		Leeds, H. A.
		33, 41
		Levett, R. J. R.
		95
		Laurence, B. R.
		100, 101
		Moth-Hunter, An Old
		15
		Morrell, H. A.
		40
		MacLaurin, A. M.
		23
		Manley, G. B.
		100, 108

Newman, L. H., F.R.E.S.	8, 24, 54	Turner, Hy. J., F.R.E.S., F.R.H.S.,	55, 56, 67, 68, 76, 77 78, 94, 101, 102,
Parsons, Capt. Q.	21		108, 109, 110, 117, 125, 126
Parmenter, L.,	38, 119, 124	Tatchell, Leonard	66, 100, 116
Pickles, W.	59	Turner, A. H.	92
Querci, Orazio	57, 74	Wiltshire, E. P., F.R.E.S.	1, 79
Riley, N. D., F.Z.S., F.R.E.S.	75, 117	Williams, L. H.	44
Sevastopulo, D. G., F.R.E.S.	97	White, E. Barton, F.R.E.S.	67, 117
Turner, H. John	35	Wakely, S.	68. 108

LIST OF ILLUSTRATIONS.

- Plate I. Peak of Sandro Dag; Camp of Mountain Shepherds in Forest of *P. nigra*. To face p. 71.
- II. Boz Dag Alpine Meadow; Junction of Zone of *P. brutea* and *P. nigra*; The High Peaks above the Forest Zone. To face p. 71.
- III. (1) (2) *Cochlidion creticum*, v. *drayi*, ♂s; (3) *Hemerophila trypanaria*, ♀; (4) *Hipparchia syriaca*, v. *cypriaca* (asym. ab.). To face p. 79.
- IV. Variation of pupae of *E. aurinia*. To face p. 88.
- V. *Colias croceus*, ab. To face p. 92.
- VI. (1) Bitter Almond Forest near Fallr, Fethiye; (2) Forest of *Pinus brutea*, South Coast of Turkey. To face p. 112.
- VII. Fethiye. To face p. 114.

Text Figures, pp. 80, 83.

Noctuae Supplement : III, (285)-(296), Index Title page; IV, (13)-(44).

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CONTENTS.

EARLY STAGES OF PALEARCTIC LEPIDOPTERA, IX, <i>E. P. Wiltshire, F.R.E.S.</i> ,	1
A HEREDITARY FORM OF <i>SPILOSOMA LUTEA</i> , HUEN., <i>B. J. Lempke</i> ,	4
COLLECTING NOTES: Aberration of <i>Polyommatus icarus</i> , <i>T. W. Jefferson</i> ,	5
CURRENT NOTES,	5
REVIEW,	6
CORRECTIONS,	7
AUCTION SALE IN LONDON OF VARIETIES OF BRITISH BUTTERFLIES, II, <i>L. Hugh Newman, F.R.E.S.</i> ,	8

SUPPLEMENT:

The British Noctuae and their Varieties, *Hy. J. Turner, F.R.E.S., F.R.H.S.*, (285)-(288)

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15TH JANUARY 1948.

No. 1.

EARLY STAGES OF PALEARCTIC LEPIDOPTERA, IX.*

By E. P. WILTSHIRE, F.R.E.S.

The following observations and photographs were made in Cyprus, Iraq, and Iran (Persia).

RHOPALOCERA, HIPPARCHIIDAE (Satyridae).

Pararge roxelana, Cr. (Plate Fig. 13.)

Other larvae of this genus hitherto known (e.g., *P. aegeria*, L., and *megea*, L.) have small globular heads, but this species has a large bicornuate head reminiscent of earlier genera in the family.

Larva, green with pale and dark green stripes. Head with two points; two similar anal points. White lateral stripes accentuate these four points. Dorsal line, dark green, double, with broad pale green edge. Stiffer hairs thereon. Elsewhere the hairs are downy. Spiracles, pale green, obscure. Foodplant: grass.

Pupa, green with white lines edging inner margin of wing-case and shoulder, also leading up laterally to cremaster. Abdomen with yellow-white subdorsal points. Suspended by tail without girdle. Pupal period (in Cyprus in April-May):—15 days.

HETEROCERA, NOTODONTIDAE.

Cerura leucotera, Stich.

It is now possible to name the larva from Tehran (Plate I, fig. 13) in my fifth article in this series (*Journ. Bombay N.H.S.*, XLIII, April 1943), as *leucotera*, Stich. I think, however, that this may be a synonym of *petri*, Alph. It will be noticed that the larva does not resemble the *C. syra* larvae illustrated on the same plate, which goes to suggest that these “*interrupta*” forms are in fact specifically distinct. The Tehran species adult varies in both sexes, and the spring generation is more heavily marked than the summer broods. The forewing band may be “interrupted” or complete in the male.

NOCTUIDAE.

Catamecia deceptrix, Stgr. (Plate Fig. 17.)

Larva, grey or brown, sometimes orange at the somital joints, with a conspicuous black or brown dorsal chain consisting of (1) a heavy double streak on the anterior part of each somite, and (2) a lighter Y mark, forking forwards, with not very divergent arms, behind it. The

*The previous article in this series appeared in *Ent. Rec.*, 58 (June 1946).

chain, in fact, resembles that of *Hoplodrina ambigua*, Schiff., except that it is not accompanied by other oblique dorsal shades. In general aspect the larva rather recalls *Polyphaenis propinqua*, Stgr. (see my first article in this series for a description and photo thereof, *Ent. Rec.*, XLIII, Plate III, fig. 11). A clear interruption of the chain occurs in the middle of each somite, separating part (1) from part (2), which are, however, united across the somital joints (base of 2 to top of 1). Subdorsal lines, interrupted, formed of grey pencilling and connected by grey-pencilled shades on each somite with the arms of the dorsal Y-mark. Dots, black. Spiracles, ochreous, black-rimmed, or black, placed on an interrupted, ill-defined blackish line with a white lower edging which tends to form upward waves on the somital joints. Underside, less pigmented. Head, small, grey-brown, pencilled with a darker central stripe and lateral mottlings. Behind and above it, a broad thoracic plate, sloping forward to the head like a receding forehead. This plate is marked with the subdorsal and dorsal lines in whitish and pairs of dots on either side of them. All feet, pale greyish.

Pupa, in a hard-cemented cocoon, subterranean. Pupation does not follow immediately this cocoon is built; aestivation is long, the insect remaining below ground from late March till late November at Basra (Iraq).

Foodplant: *Lycium barbarum*. I have found the larvae much more numerous than the adult.

It is interesting to note that the types of both *C. decepatrix*, Stgr., and *Boarmia tenuisaria*, Stgr., were discovered in the same season and placed in Palestine by Bacher (see *Iris*, XII, 1899), and that I found these two species closely associated in S. Iraq. They have the same foodplant, the same phenology, and belong to the same biocoenosis (*Lycietum* in hot desert oases in Jordan valley and S. Iraq). For the early stages of *B. tenuisaria* see my seventh article in this series (*Ent. Rec.*, LVI, Plate IV, p. 114). Recently I have seen a ♂ *tenuisaria* from Arabia (20.ii.46, Hinna); the species may therefore be bi-voltine.

Owing to the bombardment of the British Museum in 1944 my living pupae from the larva described above were mislaid there, but circumstantial evidence of the larva's identity with the *decepatrix* adult taken at Abu Jozeh, near Basra, is overwhelming. The fact, however, that my identification of the larva is only circumstantial must be mentioned.

Catocala diversa, Hüb. (see Plate, Figs. 15 and 16.)

Larvae of this species from S. Europe have been described in Spuler, Blaschke, and Seitz, perhaps all from one original description. The species has not been previously recorded from Persia. The adult, however, reared by me from a larva very different from the above descriptions is absolutely identical with adults from S. Europe which I have examined and with figures of *diversa* in Spuler and Seitz. I have, therefore, to record this species for the first time from Iran, and also to describe the form of larva which I have observed there.

Larva, pale grey, of usual *catocaline* construction, with a creamy-white, black-edged spot on the dorsal protuberance on somite 8, this somite being blackish-suffused. Dorsal line, double, pale, irregular.

Fine dots and linear freckles, not conspicuous. Two points on somite 11. A bristly fringe along legs. Head, with two black dots connected by a pale transverse bar. (Fig. 16 shows an immature, fig. 15 a mature larva (the same).)

Foodplant, *Quercus*. Habitat, Pireh-Zan oak-woods, 7000 ft., Fars.

A larva full-grown in vi. produced an adult on 2.vii.

The difference in the Persian larval form from the European is chiefly one of colouring. It is a "drier" form, according with a drier habitat, and if not an individual variation seems to be a parallel with the "drier" race of *Dryobotodes protea* (subsp. *incolorata*, Warr.), which inhabits the same oak-woods, though in this case it is the adult which, in Persia, is lighter grey and without greenish or yellow colouring. The difference in both cases may be regarded as an example of procrypsis, for the oak trunks in the Zagros woods are without lichens, etc., and subject to more continuous sunshine.

GEOMETRIDAE.

Dyscia (= *Scodionia*) *simplicaria*, Rebel. (Plate Fig. 14.)

Larva, long, robust, greyish white, with a pale dorsal horn or spur on somite 10 and two smaller points on somite 11. Dorsal line, blackish on the thoracic somites, thereafter pale and broader with pencilled black edging, interrupted on the somital joints by a dark spot and a swelling. On either side is a dark field (dorsal area) containing black pencillings and pale streaks which narrow it on each somite. Similar wavy pale markings and dark pencillings on either side. On somite 4 two setae are enlarged to form dorsal warts; elsewhere the setae are black. Spiracles, black-rimmed. Foodplant, *Thymus capitatus*, one of the dominant dwarf shrubs of the Cyprus landscape. It feeds at night.

The cocoon is formed on the surface of the earth. Pupal period, in spring, 19 days.

There must be two broods, for Rebel's type, taken at the same altitude as my *Kyrenia* specimens (i.e., on the coastal plain) was taken in autumn. I found the adult very common at light in March and April but was evidently then rather late to find the larvae; I only found one. There may also be a midsummer brood, but I think the species more probably bi-voltine. In that case there may or may not be a summer diapause in an early stage; it would most probably be in the pupal stage in late summer, though this would contrast with the first brood's cycle. The foodplant flowers in June and is probably rather dry later in summer.

PYRALIDAE, PHYCITINAE.

Nephopteryx diplocapna, Meyr.

Larva, about one inch long; pale green, with grey-mottled dorsal area and yellow-brown head. Dorsal line, defined by a paler green edging. Somital joints, paler green dorsally. Spiracles, fine, grey-rimmed.

Foodplants, *Quercus*, *Fraxinus*. Habitat:—Zagros woods.

The larva is full-grown in May in the South Zagros at 6000-7000 ft., and the adult hatches in early June (Fars, S.W. Iran).

A HEREDITARY FORM OF *SPILOSOMA LUTEA*, HUFN.

By B. J. LEMPKE.

In the spring of 1947 I visited Mr M. Hardonk at the Hague in order to examine his collection of Lepidoptera. My attention was drawn by a very fine series of *Spilosoma lutea*, Hufn., the result of a breeding up to the F_2 . The phaenotype represented by the aberration which had been produced by the original wild female was characterized by a row of strong black submarginal spots on the hindwings and a row of rather strong black spots from inner margin to apex on the forewings, the other markings of which are typical. The ♀ figured by South (pl. 77, fig. 6) is somewhat stronger marked, but belongs to the same phaenotype.

This phaenotype has some resemblance to f. *eboraci*, Tugwell (1894, *Entomologist*, 27: 205, fig. 2), but the latter is much stronger marked, especially on the forewings. Here *eboraci* shows a long black streak along inner margin and costa. Tugwell writes, that it is "the York City form," but that he obtained it by crossing a ♀ *fasciata*, Tugwell, with a ♂ *zatima*, Cramer. He therefore supposes that "the York City form" also arose from this crossing. At any rate, the *lutea* form which showed itself in the Dutch breeding experiment has nothing to do with the quite forgotten *eboraci*, and I therefore name it f. ***benesignata*, nov.**

It is a very great pity that the exact figures of the specimens obtained were lost during the war owing to the disasters by which the Hague was struck and which were also the reason why the experiment could not be continued. But I think that the data which remained, though not as exact as could be wished, are of sufficient importance to be made known.

The wild ♀ was a quite ordinary specimen. Of the F_1 all the ♂♂ were typical, about half the number of the ♀♀ was typical; the rest belonged to f. *benesignata*. A ♀ of the latter form was paired with one of the ♂♂ and the result of the F_2 was identical with that of the F_1 : again all ♂♂ typical, the ♀♀ divided between type and *benesignata*. The latter is probably multifactorial, as there is some difference in the degree of black spotting of the specimens belonging to it. But there is never any doubt as to whether a ♀ is typical or *benesignata*.

As the form showed itself in F_1 and F_2 , and as the female was typical, it must be a dominant one. Moreover, as it is very rare in Nature, the ♂ must have been a heterozygote. So the ♂ must have had the formula Aa, the ♀ aa. That means, that (theoretically) half the number of the F_1 was Aa, the other half aa. As both types were present among the ♀♀, they must also have been among the ♂♂. But then an Aa ♂ cannot phaenotypically be distinguished from an aa one. That also explains the result of F_2 . The ♀ chosen was Aa, the ♂ could be either form. Mr Hardonk had the misfortune to take an aa specimen, so that half the F_2 must have been Aa, the other half aa. This corresponds very well with the results of the females obtained.

Thus we arrive at the conclusion, that *benesignata* is a sex-controlled form dominant to the type, a case comparable with *Colias croceus*, Four-

croy, and its f. *helice*, Mb., or with *Argynnis paphia*, L., and f. *valezina*, Esp.

Sometimes, but very rarely, males are met with showing a tendency to f. *benesignata*, as, e.g., the specimen figured by South, l.c., fig. 5. It is possible that there exists another form, phaenotypically more or less identical with *benesignata*, but with another genetical constitution. But there is also another possibility. The black markings of the type form vary in intensity and depend on a number of factors, as is clearly shown by Federley (1920, "Die Bedeutung der polymeren Faktoren für die Zeichnung der Lepidopteren," *Hereditas*, 1: 221-269, especially p. 230). I therefore think it most probable that this male form represents one of the highest degrees of black design that the type form can produce. This would at the same time explain the rarity of such males.

Amsterdam—Z., Oude Yselstraat 12III.

COLLECTING NOTES.

ABERRATION OF *POLYOMMATUS ICARUS*.—In June last I took a male *P. icarus* which appears to be worthy of record in the "Journal." It was netted casually, in one of the local coastal districts, and considered on the wing to be a female of the fairly common *coerulea* variety. Indeed, the ground colour of the upperside in all wings is the deep hyacinthine blue of our northern ♀ var. *caerulea*.

Around the outer edges of the wings the intervenous areas have large black spots which dribble into streaks and extend into the central areas of the wings. There is dark scaling near the body on the forewings. The apices of the forewings are black edged with white scaling. The costal edges are black. The cilia are normal.

I have looked in vain for any reference in the standard text-books for variation of this kind in *P. icarus*, though I realize that the insect might be considered as the optimum form of the *nigromaculata* of Tutt (vol. iv, p. 188).—THOS. W. JEFFERSON, 37 Riversdale Terrace, Sunderland, Co. Durham, 28.xi.47.

CURRENT NOTES.

ATTENTION may be called to L. Vari's paper on "*Anacampsis betulinella*, a new species of the Gelechiadae" (*Tijds. Entom.*, LXXXIV, 351-353, 4 figs., tab. 1: 1941), which has been hitherto confused under *A. populella*. It is distinct by the foodplant (Birch), by genitalia, and by its blackish ground colour. "Undoubtedly *betulinella* will be found everywhere in Europe where the foodplant, *Betula alba*, grows," so that it will probably be found in England mixed in collections with *A. populella*. Meyrick (*Rev. Handb.*, p. 643) states for *populella* larva in rolled leaves of poplar, *Salix* and birch, but *A. populella* is confined to species of *Populus* and *Salix*, *A. betulinella* to *Betula*. Pierce's figures of the genitalia (*Genit. Brit. Tin.*, t. 6) are very rough but apparently

the male is *populella* and the female is *betulinella*.—T. BAINBRIGGE FLETCHER.

Mitteilungen der schweizerischen entomologischen Gesellschaft, vol. XX, Heft 6 (8.x.1947), contains, *inter alia* (pp. 550-564), a paper by J. Romieux on Migration of Lepidoptera observed in the Geneva District in 1946, with notes on *Celerio lineata livornica*, *Colias edusa*, *Pyrameis cardui*, *Laphygma exigua*, *Heliothis peltigera*, *Plusia gamma* and *Pionea ferrugalis*: H. Gallay describes (pp. 594-596, figs.) a new aberration, *caronae*, of *Melanargia galathea*.—T.B.F.

Mitteilungen der schweizerischen entomologischen Gesellschaft, vol. XX, Heft 5 (8.viii.1947), contains (pp. 474-483, figs.) a paper by H. Thomann on *Exapate duratella*, Heyd., from the Graubünden and Valais Alps. This is of interest to us because this species has been recorded from Sutherland (*Guide to the Collections of British Lepidoptera*, National Museum of Wales, p. 24, t. 1, ff. 15, 15a: 1925), although this seems to have been overlooked by all subsequent writers. J. de Beaumont (pp. 505-518, figs.) deals with the European species of *Cero-pales* (Pompilidae), and F. Schmid (pp. 519-556, figs.) with some Swiss Trichoptera which are new or little known.—T.B.F.

WE have just received from Berlin the remaining three huge volumes of the "Transactions of the VII International Entomological Congress" held in that city in 1938, making five in all.

REVIEW.

Trans. R. Ent. Soc. London, Vol. XCVIII, Part 7, pp. 273-372, 45 maps (23.x.1947), is devoted to "The Origin and History of the British Macro-Lepidoptera," by Dr Bryan P. Beirne. This is an attempt to reconstruct the history of the British Lepidopterous Fauna as far back as some 120,000 years ago, its mode and date of arrival. So far as this can be done at present, we have here an interesting account and it is considered that "at the very minimum 47 per cent. of the species have been established in the British Isles since before the end of the Ice Age and a minimum of 34 per cent. date wholly from pleistocene times." However, it is further noted that "because of the absence of palaeontological evidence, the reconstructions of the species' histories are necessarily almost entirely theoretical and therefore controversial," but the present is an attempt at presentation of one set of views, which are subject to discussion.

The Lepidopterous Fauna of these Islands is a very fluctuating entity. Even in a short period, such as one hundred years, it is subject to losses and gains: *Aporia crataegi*, now extinct, was fairly widely distributed; *Polychrysis moneta*, first found less than sixty years ago, has now spread throughout England. The ecological conditions have also varied widely in the last two thousand years; less than two thousand years ago England was a forested country to a much larger extent than anything that we can envisage nowadays. We know also

that there have been fluctuations in climate. All these changes, even if apparently slight, influence the Insect Fauna. When I came to Rodborough in 1933 *Hepialus lupulinus* used to swarm in my field; then we had a very wet and mild Spring in 1937 and apparently the warm, damp conditions killed off the larvae, so that the moths were very scarce in the succeeding Summer and have never regained their numbers since. The May frost of 1935 killed off all the *Tortrix viridana* on my Oak trees and I have not seen one since then. A few bad seasons of that sort might well wipe out a species altogether.

In modern times the greater number of the faunal accessions have been due to Human Agency and it is interesting to note how rapidly many species have spread. *Bupalus piniaria*, for example, is now a common species throughout England; we turn to Donovan's *Natural History of British Insects*, X, 27-28, t. 336 (1801), and read "this rare and curious species . . . has been for some years admitted to the cabinets of English Natural History, but on the most dubious authority. That it is an inhabitant of Great Britain is, however, now ascertained, for in the summer of the present year, in about the last week of June, it was observed in great plenty in a fir wood at Crathes, on the north bank of the River Dee, in Mearnsire, Scotland, by George Milne, Esq., of Surrey Place, Walworth."

Panolis flammea, Schiff. (*griseovariegata*: *piniperda*), is another case of a species which has spread throughout the country in less than one hundred years. Stephens (*Ill. Brit. Ent.*, *Haust.* III, 20 (1.vii.1929) tells us: "The mere accident of discovering this beautiful species to inhabit Britain, I believe, fell to me, having beaten a chance specimen out of an old fir tree at Hertford, in the April of 1810, which remained unique for three or four years. In the spring of 1815 my friend, J. Scales, Esq., took the insect in considerable plenty near Beachamwell, in Norfolk, flying about the blossoms of the *black* thorn, in the vicinity of some pines . . . since that period the insect has been taken in the larva state in abundance at Birch Wood, and near Ripley. "Matlock," Rev. F. W. Hope. "York, March 2nd, on birch trees, rarely," W. C. Hewitson. Apparently it spreads rapidly, for by 1831 (*tom. cit.*, p. 324) we find further records from Raehills and Newby Moss, Orton, etc.

Hepialus sylvinus is a notable absentee from Ireland, being otherwise known from England, Scotland and Wales, N.W., C. and S.E. Europe, Asia Minor and C. Asia. Meyrick recorded it from Ireland, but Dr Beirne shows it (map 38) as non-Irish. Possibly it may yet turn up, or perhaps it has become extinct there.—T.B.F.

CORRECTIONS.

An unusually gross misprint occurred in the December issue. On p. 132, line 13, "*Aglaia*" was printed in Roman. Proof was marked for Italics with usual marginal "Its." Result "*Aglaia*" was deleted and "Its." substituted, utterly destroying the sense of the line.

Lower down, the omission of "o" in the Greek word "homoeosis" was overlooked.

AUCTION SALE IN LONDON OF VARIETIES OF BRITISH BUTTERFLIES.—II.

By L. HUGH NEWMAN, F.R.E.S.

(Continued from p. 152.)

The second portion of the Rev. J. N. Marcon's famous Eastbourne Collection of Butterfly Varieties was offered for sale by Auction on 19th November 1947 and the total of some 190 lots realized approximately £650.

The first insect of note to be sold was a melanic *P. napi*, an imperfect specimen caught at Nelson in June 1926 by A. Swift and recorded in the "Entomologist," vol. LX, p. 11. It fetched £5 5/-. This species has been bred in captivity more intensively, within recent years, than any other on the British list, and some remarkably fine banded and albinistic races have been established, both in the typical white form and in the ab. *citronæa*. Some good forms at this sale realized from 30/- to £4 15/- a lot.

A remarkable variety of *G. rhamni* realized £10. It was an old specimen, bred by a Mr J. Weir on 4th July 1904 from a larva collected by him at Butts Lawn, Brockenhurst, Hants, the Mecca of all entomologists in those days! The central portions of all four wings were flushed with dull orange, but curiously enough it had not the appearance of a *G. cleopatra*. An extreme gynandrous *cardamines*, set as an underside, made only £7 5/-, a considerable drop in price from a Sale some months previously, when a rather similar insect, set as an upper-side, sold for over £20.

Only the really outstanding varieties of *A. euphrosyne* and *A. selene* make really big money, and lot 118 was one of these. It was a superb melanic *selene* in bred condition, taken by Mr Marcon at Chiddingfold in June 1946 and was worth the £25 it realized; other good *melaina* forms sold for from £4 to £5 each.

The highest price for any one insect was £31 bid by a Dealer for an extremely rare di-morphic hermaphrodite *A. paphia*. The left side was male, and the right side ab. *valezina*, and the insect was taken by Mr W. G. Nash in the New Forest in July 1922. *Melaina* forms, very extreme, fetched as much as £10 and £11 each, and the two best were both taken by Mr Marcon himself. The larger Fritillaries, however, nearly always command high prices if the variation is really extreme, and the condition of the insects is perfect. For example, a magnificent black female *A. aglaia* (Ex: Vauncey-Crewe Collection) was sold for £10 10/- and another figured in Frohawk's "Varieties of British Butterflies" realized no less than £22. But it was only to be expected with a figured insect in bred condition. The prices for the best *A. cydippe* were not quite so high, however, the finest one, a superb female with melanic forewings, taken in Sussex in July 1944 by the Vendor, realizing only £17, a nice return for an afternoon's work however!

The other Fritillaries, *A. cinxia*, *aurinia* and *athalia*, never reach the heights, and the best price was for a *Flavus-pallidus athalia*, a straw-coloured male in bred condition, it was sold for £4 5/-. The Vanessa group are not popular at Auction Sales these days, perhaps too many have been bred in captivity, and most of the *V. urticae* varieties were withdrawn as they did not reach the reserve prices put on them. But a beautiful ab. *Iole* of *A. iris* sold for the high price of £11 10/-, but it was a very extreme form.—(To be continued.)

MEETINGS OF SOCIETIES.

Royal Entomological Society of London, 41 Queen's Gate, S.W.7: Jan. 21 (Annual meeting) and Feb. 4, at 5.40 p.m. *South London Entomological and Natural History Society*, c/o Royal Society, Burlington House, Piccadilly, W.1; 2nd and 4th Wednesdays; 6.0 for 6.30. *London Natural History Society*: Tuesdays, 6.30 p.m., at London School of Hygiene or Art-Workers' Guild Hall. Syllabus of Meetings from General Secretary, H. A. Toombs, Brit. Mus. (Nat. Hist.), Cromwell Road, S.W.7. *Birmingham Natural History and Philosophical Society—Entomological Section*: Last Fridays in month, at 7 p.m., at the Birmingham Museum and Art Gallery. Particulars from the Hon. Secretary, G. B. Manly, 72 Tenbury Road, King's Heath, Birmingham, 14.

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CONTENTS.

ABERRATIONS OF BRITISH MACROLEPIDOPTERA, <i>E. A. Cockayne, D.M., F.R.C.P., F.R.E.S.</i> ,	9
FIELD NOTES FROM ANATOLIA, II. SANDRS DAGH, <i>Malcolm Burr, D.Sc., F.R.E.S.</i> ,	10
THE OAK PROMINENTS, <i>An Old Moth-Hunter</i> ,	15
COLLECTING IN WEST SURREY—1947, <i>V. R. Burkhardt, D.S.O., O.B.E.</i> ,	20
COLLECTING NOTES: Collecting at Torquay in 1947, <i>Q. Parsons</i> ; Extra Broods, <i>C. S. H. Blathwayt</i> ; <i>Cidaria obstipata</i> in Glos., <i>T. Bainbrigge Fletcher</i> ; <i>Colias croceus</i> in Glos., <i>Id.</i> ; Winter Lepidoptera at Cheam, <i>H. A. Morrell</i> ; A Distasteful Species of <i>Stenotarsus</i> (Endomychidae; Col.), <i>G. H. Lowe</i> ; Pupation Sites for Brassicae and Rapae, <i>T. D. Fearnchough</i> ; —, <i>Alan M. Maclaurin</i> ,	21
AUCTION SALE IN LONDON OF VARIETIES OF BRITISH BUTTERFLIES, II, <i>L. Hugh Newman, F.R.E.S.</i> ,	24
SUPPLEMENT:	
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ABERRATIONS OF BRITISH MACROLEPIDOPTERA.

By E. A. COCKAYNE, D.M., F.R.C.P., F.R.E.S.

Eilema deplana, Esp.

Ab. **plumbea** ab. nov.

Forewing—uniformly deep brownish-grey; hindwing—uniformly dark grey with the basal area no lighter than the marginal; head, thorax, and legs dull grey; abdomen wholly dark grey.

Type: ♂, Box Hill, Surrey, vii.1911. E. A. Cockayne. *Ent. Record*, 1911, 23, 309. Pl. 12, fig. 2.

Paratypes: 2 ♂♂, Mickleham, Surrey. Sir Beckwith Whitehouse. One in perfect condition, the other slightly worn. These differ in certain respects from the type. The forewing is dark leaden grey at the base, dark brownish-grey elsewhere, becoming a little paler towards the margin; hindwing and abdomen dark grey; thorax, coxa and part of the femur of the prothoracic leg, and a streak along the costa at the base of the forewing orange.

Cleora ribeata, Clerck.

Ab. **nigra** ab. nov.

Forewing—unicolorous black with discal spot visible; hindwing—unicolorous blackish-brown becoming black towards the margin, discal spot black; thorax black, abdomen blackish-brown with a pale anal tuft in the male.

Type: ♂, Mickleham, bred 26.vi.1925, E. A. Cockayne.

Allotype: ♀, Mickleham, bred vii.1925.

Paratypes: 2 ♂♂, Box Hill, Surrey, bred vii.1917, L. W. Newman; 1 ♂, Box Hill, vii.1909, 1 ♀, Mickleham, bred 21.vi.1925, E. A. Cockayne; 3 ♀♀, Box Hill, bred vii.1917, L. W. Newman; 2 ♀♀, Box Hill, 1909.

This aberration is included by Prout under ab. *sericearia*, Curtis, but Onslow (*J. Genetics*, 1920, 10, 135) proved that it is genetically distinct, being dominant to ab. *sericearia*, which in turn is dominant to typical *ribeata*. It is figured by Barrett. Vol. 7, Pl. 312, 1 e and 1 f.

Ectropis crepuscularia, Hb. (*biundularia*, Esp.).

Harrison (*J. Genetics*, 1923, 13, 333-352, Pl. 18, Figs. 9-14) claims that in the course of hybridising *E. crepuscularia* and *E. bistortata*, Goeze, he obtained a new form, which he calls "streak" resembling ab. *delamerensis*, Buchanan White, but with irregular streaks and blotches of the colour and pattern of typical *crepuscularia*. He showed that "streak" is recessive to *delamerensis* and dominant to typical *crepuscularia* and that these three forms are allelomorphs. Riding and Bacot also obtained hybrids between these two species, a full account of which is given by Tutt (*Trans. Ent. Soc. Lond.*, 1898, 17-42). They chose a male and a female "streak" which must have been heterozygous, from a brood of typical and "streak" from York and obtained hybrids with *bistortata* approximately half of which were "streak." The mosaic parents were incorrectly called *delamerensis*. The hybrids *bacoti-suffusa*, Tutt, and *ridingi-suffusa*, Tutt (*British Lepidoptera*, 5. 31-35) are therefore the mosaic form "streak" and not *delamerensis*, though some have very few white scales and are almost indistinguishable from *delamerensis*.

merensis. They also crossed *bacoti-suffusa* ♂ with *ridingi-suffusa* ♀ and obtained hybrid *reversa*, Tutt, many of which were also mosaics.

Tutt says in his paper on page 35 that *delamerensis* in Yorkshire is often piebald and since this form is a genetic entity it requires a name.

Ectropis crepuscularia, Hb.

Ab. **varia** ab. nov.

Varia=piebald. Like ab. *delamerensis*, Buchanan White, but with irregular streaks and blotches of the colour and pattern of typical *crepuscularia* scattered asymmetrically on the wings on both sides. Sometimes there is a large pale patch on one forewing or hindwing while the corresponding wing is almost entirely dark, or there may be large blotches or small streaks distributed much more symmetrically. In some cases there are merely two or three thin streaks, each consisting of a few pale scales and such an insect is easily mistaken for *delamerensis*.

Type: ♂, Cannock, 15.v.1898, F. Woodforde.

Allotype: ♀, Knutsford, Cheshire, 29.iv.1902.

Paratypes: 1 ♂, Wadworth, Yorkshire, 1901. 3 ♀♀, Barnsley district, bred vi.1915, L. W. Newman. 3 ♀♀, Knutsford, 26.iv.1902, v.1902, and vi.1902 respectively.

Barrett gives a poor figure, Vol. 7, Pl. 308, Fig. 1 c.

Boarmia roboraria, Schiff.

Ab. **varia** ab. nov.

The form is melanic, peppered all over with dark scales like the darkest specimens of ab. *obscurata*, Stdgr., but it has irregular streaks of the colour and pattern of typical *roboraria* scattered asymmetrically on all the wings.

Type: ♂, Coomb Wood, Coventry, Warwickshire, 14.vi.1910.

Paratype: ♂, same data. Both in the Rothschild collection.

Unless stated otherwise all the moths mentioned are in my collection.

FIELD NOTES FROM ANATOLIA.

II. SANDRS DAGH.

By MALCOLM BURR, D.Sc., F.R.E.S.

On 19th July we left Denizli on a roundabout journey to the south coast, passing through Mughla, where we stayed the night, leaving the next afternoon by lorry for a small township called Köychehiz on a lake of the same name. After an hour or two over limestone hills, where the dominant tree was some species of oak, and the brooks were lined with lovely clusters of oleander and the mauve tassels of *Vitex*, reminiscent of *Buddleia*, we ran down to a brook on a much lower level. In the jungle beside the brook was a gnarled old tree with leaves like those of a plane but half the size. This was the famous *Liquidambar*, which flourishes in the neighbourhood of the lake, a famous Tertiary relict, in this curious isolated locality; its only congeners are in South China and the southern part of North America. It is an attractive tree, a source of incense, and probably affords a home to obscure forms of life of equally ancient descent. It was heavily overgrown with matted festoons of wild vine and *Smilax*, both Tertiary relicts, so I felt hopeful of finding some interesting insects. Further on there were dense thickets,

which had a wild, primitive look about them. Off the wet ground there was *Erica arborea*, *Cistus* and *Pinus brutea*.

We stopped for a moment on a flat meadow where cattle were grazing, a clearing in the jungles. The only Orthoptera I could see were the usual *Aiolopus strepens* and *Acrotylus insubricus*, but in the thickets I saw a larva of *Empusa fasciata* and a handsome *Pholidoptera* that was too nimble for me. That was the first Dectid I had seen in this part of the world. Of other insects, the butterflies looked to me like small heaths and common blues; there was a *Palpares* flapping clumsily across surprisingly fast, and a handsome dragonfly, that seemed to me an unfamiliar species of *Gomphus*.

About half-past four we ran into the village. It is a straggling, not unattractive place, extremely hot, unwholesome and saturated with malaria, on the edge of a beautiful lake, surrounded by high mountains. To the north was a strange-looking massive of a rich red colour, giving it an unusual appearance. This was the mass of which Sandrs Dagh is the dominant member; it consists mainly of serpentine and other basic rocks, without a trace of limestone, where Davis expected to find a very distinctive flora, and I hoped for interesting insects.

The village was adorned by such introduced exotics as Cactus, Agave, and an avenue of Eucalyptus, which was widely planted in southern Europe during the last century as a fetish against malaria, while on waste ground there grew as strange weeds two species of *Datura*. The Forest Department, which in Turkey is well managed nowadays with a keen, energetic and competent staff, offered us hospitality, but as it was suffocating indoors, I preferred to turn in out in the garden. My hosts and friends were horrified at the idea of sleeping without a mosquito curtain, and incredulous when I told them that I paid no attention to mosquitoes, as long experience had taught me that I enjoyed immunity. Sleep was banished, however, by a miscreant called the *davulju*, whose profession it was to beat a drum during the wee small hours with the definite purpose of preventing people sleeping, as it was Ramazan, and the fast was observed with rigour in this remote spot. He was efficient at his job, supported twice during the night by a shot from a cannon as a time signal.

Next morning I strolled along the shore of the lake, among oleander, *Vitex*, bramble and *Phragmites*, as far as a jungle of Liquidambar. Here the ground was flat, with a little thin grass. There was immature *Acrydium* and a freshwater crab, a single *Tridactylus*, a typical fauna, as the place is flooded in winter and spring. Sweeping in the bushes around produced a larval *Tettigonia*, *Phaneroptera* and *Anacridium*. Although it was hot, the first butterfly did not put in its appearance until 10.30, when I saw a brown *Lycaena* and *P. machaon* cruised by, a deep yellow form. The shore itself consists of black sand, detritus of the basic rocks, fringed with *Phragmites*, gay with oleander bushes, with bramble, *Inula* and *Vitex*. The latter, in spite of its reminiscence of *Buddleia*, does not seem attractive to insects.

In the afternoon we left for the subalpine village of Aghla, to be our base for the climb. For the first hour we rode over an almost flat shingle place, with desiccated watercourses and clumps of *Vitex*, oleander, myrtle and *Styrax*, a shrub reminiscent of a hazel, carrying a small, very hard fruit shaped like a child's spinning top. Davis told me it is

interesting as the most westerly extension of a group characteristic of China, so it is a suitable neighbour for the Liquidambar. There was scarcely a sign of life, as everything was taking refuge from the shimmering heat. Not a bird did I see, nor a butterfly. The only live thing was a mud turtle, *Emys orbicularis*, in a bed that was still moist in patches. Presently we entered a ravine of the red rock, with a mountain of white quartzite on our right; the path was littered with lumps of serpentine, gneiss, quartz and white schists. Here was the forest of *Pinus brutea*, with an undergrowth of *Styrax*, myrtle, lots of oleander and the undescribed alder fringing the brooks we followed upwards, all festooned with *Smilax*. An hour or two more brought us to the village of Aghla, which consisted of scattered cottages, each with a patch of ground laboriously cleared, but all copiously watered by the torrent. There was no inn, but a rustic café. We turned in on the ground under the shade of immense chestnuts, old planes and the undescribed alder. The altitude was about 860 m., or 2800 ft.

Next morning, July 22nd, we started off early to climb the mountain. While the men were loading up the ponies, I caught a number of *Agrion splendens*, with a conspicuous white spot on each wing. The pines were full of Cicadas that kept up their chirring, through which at times I caught a shivering note that had a clearly Decticine sound about it, but I could not catch a glimpse of a specimen. Suddenly an excited cry from Kamil Bey called me to look at a big insect. It was sitting on the trunk of a pine about a foot above the ground. There was no mistaking it, though I had never seen one alive before. It was *Drymadusa*, I suppose either *spectabilis* or *magnifica*, in either case well named, for it is truly a splendid insect. It is one of the largest Orthoptera in Europe, in a gently marbled pale brown uniform, a most handsome creature. The genus is characteristic of Anatolia, where there are several species, most of them brachypterous.

To see it was one thing, to catch it another, for it can leap, it seemed, for yards, and took to the wing instantly I approached. "*Sichrar! uchar!* It leaps! It flies!" cried Kamil, for the thrill I felt was contagious. The monster settled on the top of a small branch about six feet above the ground. I could see its great goggle eyes staring cautiously at me. I mobilised my forces, standing the guides and pony men as scouts on an outer circle, with Davis below and Kamil Bey above, for it was on a steep slope, and then I carefully stalked it from beneath. I calculated that it would watch the others and not see me, as I crept up to it beneath the branch on which it was sitting. Then I pounced and gripped it round the branch with the fingers of my left hand. I could hardly hold it, as it struggled so fiercely, but then I gripped it with my right, and triumphantly thrust the kicking, flapping, spewing monster into the bottle.

There was little life about. A few pretty *Oedipoda aurea* and a single *Platycleis*, a male. Even ants were few, but it was interesting to find one caught in a drop of gum oozing from a pine, a potential "insect in amber."

Presently we entered the zone of *P. nigra* and here all life seemed to cease. There had been a huge forest fire and for an hour or more we climbed among charred and scorched trees, with a little spare ground flora sprouting up, chiefly *Alyssum*. About 10.30 we crossed a small

ridge, beyond which I could hear the sound of running water, and we came out on to a small level turfy clearing, covered with loose stones, watered by a dozen bubbling springs. This charming little oasis is called Chokluje, which implies plenty. The altitude about 4800 ft.

In one corner there was a big clump of tall *Cirsium*, high as a man. It seemed to be swarming with *Argynnis pandora*, a beautiful sight, with a big *Melitaea*, some *Hipparchia* and several *Melanargia*; *P. rapae* numerous, a few small Lycaenids and a very small, very dark *C. phlaeas*.

In Orthoptera there were plenty of *Oed. caeruleascens* and *Oed. aurea*, a *Calliptamus*, I think *C. tenuicercis* Tarb., a *Stenobothrus fischeri* and *Omocestus*.

Davis brought me a remarkable *Sphingonotus* heavily impregnated with blue pigment. Never have I seen so highly coloured a specimen of this usually pallid genus. There were immature *Acrydium* near the water, probably *A. depressum*; nymphs of *Ameles*, I suppose *A. heldreichi*, were common on the *Alyssum*, the local weed, crawling among the tufts of which were a few specimens of an unfamiliar Dectacid, grey and white, brachypterous, with straight ovipositor; perhaps *Drymadusa*. I worked hard for earwigs, turning over stones till my back ached, without finding one.

Then two hours more climb among the charred skeletons of splendid pines and prone logs, the bark off, white corpses; the ground flora and fauna exterminated. Then, at about 1760 metres we came upon another *yayla* or alpine pasture, watered by a couple of brooks, surrounded by a wall of scorched *Pinus nigra*, with a younger growth making its way. It looked as though there had been two fires, one about five years, the other about thirty years ago. This was Gökche ova. Rearing its blunt head above us was the summit of Sandrs Dagh, a few hundred feet above the top of the tree zone.

The place seemed rich in *Odonata*, but there were few butterflies. I found no earwigs, but Kamil Bey produced a female *Pseudisolabis kosswigi* which he took in his tent. This was provoking, as it is possible that he had brought it in his kit all the way from Boz Dagh, although I see no improbability in its occurrence here.

There were still considerable numbers of a handsome *Poecilimon* of a coloration distinct from the species familiar to me, that may very likely be a local kind. A common grasshopper was a *Dociostaurus*.

My friends took the horses and went up to the summit; they reported an easy climb, but I had shirked it, though as a matter of fact the climb I did to a smaller peak was much more laborious. I wriggled my way up to a little plateau, with plenty of *Alyssum* and grassy plants. Here there were butterflies, *A. pandora*, *Colias croceus*, *P. rapae*, a *Melitaea*, *V. cardui*, some Lycaenids and *Melanargia*.

Of bird life there was little. A few magpies, a pair of ravens and in the distance an Egyptian vulture flew by. A few small Stenobothrids, surprisingly still immature, and an immature Dectacid. The season is very late up here. I was glad to find a few *Nocarodes*, a wingless, slug-gish genus split into numerous isolated species. The colour scheme is odd, but characteristic, the demarcation between the black and ochre very sharp.

There was a family of shepherds camping near, from whom we bought a scraggy mutton that we roasted whole and enjoyed immensely. We were joined by a cheerful little man with a trim beard, carrying an old-fashioned rifle; he bowed and saluted us most politely. He was full of grins and laughter, very pleased with himself because he had shot a *geyik*. That is the Turkish for stag, and perhaps he had, for there are red deer in these mountains, but it seems more likely it was a roe. The countryfolk here, as in most countries, are very casual in their names of animals. In the evening the children from the shepherds brought me, to my surprise, a short-winged *Arcyptera*, very like the Spanish *A. kheili* and Dalmatian *brachyptera*.

Davis brought me some *Nocarodes* from the summit, from about 2300 m., where white replaced the yellow of my specimens; the female was strongly tinted with blue; he had also an all red female from the forest zone, about 2000 m. Also a remarkable Decticid larva unfamiliar to me, very different from my *Drymadusa* taken below. He reported no *Parnassius* to be seen, but brought a number of a small dark *Thecla*, a very bright *V. urticae*, some *Pieris rapae* and *napi*. He saw a dark brown butterfly that might have been *Erebia*.

The next day we had to leave, as botanists are always in a hurry since they give themselves so much more extensive a geographical programme than do entomologists, and I was sorry to abandon this interesting and rather inaccessible spot. The ride down was uneventful, except for the capture by Davis of a female Pamphagid, probably *Orchamus*, on a branch of *P. brutea*. When we stopped again at Chokluje, I took a female Decticid that was clearly different from the *Drymadusa*.

Back in Aghla, I was greeted by a small boy with a bright green, tender female *Pholidoptera*. Clearly, there are several species of Decticidae on this mountain, but it requires much time and patience to make a collection, as specimens are so few and far between and, once found, are difficult to catch. From Aghla all else I had to report was a couple of *Platycleis*, some Cicadas, a *Palpares*, few odd beetles, *Oedipoda* and some *Gerris*. Plenty of water, but no Trichoptera seen.

We turned in again on the ground under the trees, Davis and Kamil Bey, like sybarites, had camp beds. We were disturbed in the blackness of night by men with blazing torches. Our guides were anxious to get away early, as they had their own reasons for wishing to get back that night. But it really seemed the height of luxury when the keeper of the rustic café brought us each a glass of tea. Early morning tea in bed was the last thing I was expecting when I rolled in my blanket among the leaves, not forgetting to put out a big sponge with most inviting holes for the earwigs, but none accepted the invitation.

Back to Köcheghiz with enough daylight for another stroll, so went to verify the apparent lifelessness of that stony desert. There was not much, but a fair number of *Oed. miniata* (= *gratiosa*), *Acr. patruelis*, *Sphingonotus* cf. *caerulans*, *Aiolopus strepens* and *Anacridium aegyptium* here and there. I was surprised by a commotion on a stone near where I was sitting, and saw a huge *Asilus* land, carrying a burden bigger than itself. It was a fat female *Oed. miniata*, which must have been much heavier than the fly. It was quite dead, which made me suspect *Asilus* has poison glands.

THE OAK PROMINENTS.

By AN OLD MOTH-HUNTER.

(Continued from Vol. 59, p. 75.)

Drymonia ruficornis (née *chaonia*) is a moth that has very different habits, in its larval stage, from *D. trimacula* (*dodonaea*) and *N. anceps* (*trepida*). It is a lover of dense shade and is to be found only—in my experience—on trees which face west or, more usually, north. That is to say its foodplant must be shaded from the sun on east and south—better still from all the points of the compass. I found it, in Wales, and fairly commonly, only on young oaks that fringed the north and west sides of steep well-wooded hills. A path which the sun did not reach until latish in the afternoon was a favoured spot, and several times I found the larvae on trees whose lower branches never received the sun at all. Once, exploring the low ground on the north side of a hill, I found a path that led up through the wood to the top. It was a small path that entered a dense growth of youngish oaks, so that it at once became a dark tunnel of greenery. After proceeding a few yards up this gloomy arcade I pulled down a branch to see if by chance any kind of larva would inhabit such a dismal place, and at once found a full-grown larva of *ruficornis*. Presently, a little higher up the path, I found another, and half-way up the tunnel a third. Sunshine therefore is unnecessary to this species. All those found on the fringes of woods that faced west were on the lowest branches and well shaded from the afternoon sun.

I found quite a number of these larvae in three successive years—all in the same places and some of them on the same trees as in previous years. The oaks were all young ones, not, I think, more than fifty years old. At the end of one particular path which skirted the west side of a wood there was a little glade, and when I came to this glade, in June, I always turned northwards; for here I found, in three successive years, larvae on the trees fronting the glade and facing due north. After I had discovered that *ruficornis* was fairly common in that locality I searched similar spots on other hillsides, and again my observations were borne out: whatever habitats *ruficornis* might choose elsewhere, in that part of Wales he preferred shade above all things. And he liked young trees too. And several times I found him, in his first and second instars, on the smaller branches which left the trunk four or five feet from the ground.

In *The Entomologist* of February 1888 (Vol. 21, pp. 36-38) the Rev. Bernard Smith of Great Marlow related some of his experiences with this species. Said he: "The moth . . . seems to prefer detached oaks of moderate size, on which the larva has been found, by the aid of a short ladder, up to the very summit. The trees are either in open spaces in woods, or shaded by larger trees near them." So, as I never found in Wales a larva of *ruficornis* on a detached tree, it must be a case of *autres champs, autres mœurs*; moreover, every larva that I found was on a branch well within my reach, and I collected a good many larvae in all stadia. But last year, while gathering *ridens* from a very young tree (perhaps only 25 years of age) in Essex, a tree which

stood in the open on the south fringe of a woodland glade, I found a young *ruficornis*; so perhaps Mr Smith's experience is the usual one for the south of England. Yet my Essex larva was only six feet from the ground, again on the north side of the tree. I am a little sceptical about larvae of any species of this Family choosing to feed right up aloft where the stormy winds do blow!

To beat for this larva is not a proceeding which should appeal to the naturalist. *Ruficornis* is exceedingly easy to find by searching, and it can then be transferred to your glass-topped box without any risk of upsetting its somewhat delicate constitution. It sticks to its foodplant with the tenacity of a *fagi*, and if you do succeed in beating it off its perch it is heavy odds against bringing it to the pupal stage in a larva-cage. Moreover, larvae which can be beaten off their leaves are often ichneumoned and therefore feeble. When full-grown a larva of this size is of course candy for kids, and the field lepidopterist who cannot spot such a conspicuous caterpillar on the midrib on the underside of an oak leaf had better take up some other hobby. There are some species which one *must* "beat" to obtain; for they rest by day on the underside of a branch, packing themselves into the smallest crevices, and only by jarring the branches with a stout stick can one procure them—unless indeed your time is unlimited and you fear neither a stiff neck nor eye-strain. But all larvae which rest by day on the leaves are quite easily to be found by searching, and the use of a beating-tray for these is, as I have previously said, a confession that you are no great shakes as a field lepidopterist. Therefore leave your beating-tray at home when you go in search of *D. ruficornis*, *D. trimacula* and *N. anceps*.

When to search? I recommend you to start during the last week of May and continue your quest throughout the first half of June—though I have found *ruficornis* on his native oak so late as June 21st, and in 1944 one, in my cages, did not pupate until June 27th. Usually, however, this larva goes to earth about mid-June.

Barrett's remark (*Lep. Brit. Is.*, III, 132) "June and July on oak, usually on detached trees in fields or parks or the more open woods" is so much at variance with my own experience that I cannot help thinking he must have confused this species with *D. trimacula*. He also says: "Apparently rare in Wales, but found near Swansea." I can speak only of central Wales, and *ruficornis* is certainly not a rare moth there. South (*Moths of the Brit. Is.*, 1st Ser., p. 68) says: "Feeds in June, July and August," yet goes on to remark that "from about a dozen eggs that I had in May 1907, the caterpillars hatched on the 13th of the month. Only one got through safely to the chrysalis stage which it reached at the end of June. On June 26th some half-grown and smaller caterpillars were received from the New Forest, only one of these was seen on July 19th, but it was then nearly full grown and appeared to be quite healthy, and others had pupated or died." He too seems to have mixed up the two species—and he also remarks that the pupa is "generally found at the roots of isolated oak trees."

It may of course be that the Welsh race of *ruficornis* has evolved habits different from those found in England; but at present I am not satisfied that this is so. Of all the larvae which I found and bred from the egg in Wales the latest date of pupation was June 27th. *Trimacula*

is five weeks later than *ruficornis* in all its stages. The larvae of the two species are much alike: Buckler's pictures (Plate XXXIV) are not at all good and fail to give an idea of the beauty of either of these larvae. South's confession that he reared only one larva from "about a dozen eggs" seems to indicate that his ability to rear larvae was not of a very high order.

The Rev. J. Hellins, in Buckler's *Larvae* (II, 157), it seems to me, has fallen into the same error as Barrett and South; for although he says that "all my recorded dates of the emergence of the imago lie between April 11th and 30th" and that "my dates of the capture of the larva vary from May 9th to June 25th," he asserts that "In 1886 Mr Bignell . . . sent me a *small larva* July 17th, which continued to feed for just a month, but died without changing." If this larva was only 35 mm. long, as he asserts, when it died in the *third week of August* it is more than probable that it was not *ruficornis* at all but *trimacula*. This supposition is somewhat borne out by Hellins' further statement that this larva had "pinkish spiracles," which none of my *ruficornis* had though in all my *trimacula* the spiracles were surrounded with pink. For the rest, his description is chiefly of a *ruficornis* larva with a dash of *trimacula*—at least so far as my Welsh larvae were concerned. Barrett apparently never saw a larva of *ruficornis*, since he contents himself with copying from Hellins. I hope some reader of this Journal who has devoted his attentions to finding and rearing both these species for several years in England will be prompted by my remarks to relate his experiences in these pages. I am of opinion at present that Barrett copied from Bernard Smith, that Hellins confused the larvae of the two species, that South did likewise and that the latter copied his remark about isolated trees from Barrett, who had it from Smith.

Ruficornis is indeed a beautiful larva in all its instars, a bright emerald green with brilliant canary stripes. When first the adult plumage is assumed the dorsal line is a delicate mauve. At the first glance the larva is plainly something choice and rare. But it is not what I should call an "easy" larva to rear and needs constant attention. The skilled practitioner, however, should have no difficulty with it. Its cage must be kept as clean as a new pin, admitting subdued light on all sides; the food must be tender when the larva is young and carefully selected throughout the larva's career. Judicious spraying with tepid rainwater by means of a "mist" syringe is essential—I emphasize that word "judicious"—and the larva must be disturbed as little as possible. Fresh food *every* day is essential, and you must remove all leaves of the previous day's meal, amputating with your sharpest scissors the uneaten parts of the leaf on either side of the midrib upon which the larva reclines, so that when dinnertime arrives your caterpillar will be compelled to seek—and be able to find at once—new and toothsome food. No matter how fresh yesterday's meal may look to you, remember that you yourself are quite unable to tell whether that leg of mutton on your sideboard is tender or tough merely by looking at it. You must, in fact, treat this larva not only as though it were a racehorse in training but as though it were the favourite for the Derby. And this is as easy as falling off a log if only you will *find the time and take the trouble*.

When bred from the egg it is best—as with the other two oak-eating Prominents—to place the emergent larvae on an oak seedling about a foot high well established in a flower-pot. Cover the plant, and pot, with a gauze (not muslin, which has too fine a mesh) bag supported by a four-sided frame of split cane and sufficiently big to be quite clear of the foodplant. If the gauze touches the foodplant it is ten to one that a larva will wander on to it, and then you—and he—are done. You must go over your plant with a fine-tooth comb, so to speak, to make sure that it harbours no predators; and be particularly careful that no spider or earwig can get inside your cage from below. Remove the gauze and syringe *very* lightly every evening with your mist spray. Rearing these tiny larvae in this way necessitates a deal of pains; but then, it is the “deal of pains” that gives zest to the rearing of delicate larvae, and the reward is a rich one.

When you come to rear this very handsome larva you will notice something of which none of the books makes mention. In the last two instars the larva's dorsal line becomes almost obliterated, the whole caterpillar appearing to be heavily powdered, and it remains “powdered” until shortly before it pupates. It then undergoes a remarkable change. Not only does it shorten by about a quarter of its length and become thicker but the powdery appearance disappears and the larva becomes so shiny that it looks as though it were in a profuse perspiration. The yellow dorsal line reappears and becomes as distinct as it was in the third stadium.

The moth sometimes emerges as early as the beginning of April, but more usually about the middle of the month. Only once have I found it in the wild, though I searched the trunks of oaks assiduously in places where I had taken larvae for three years. It is possible that on eclosion the imagines run higher up the trunk than is convenient for the lepidopterist. In an observation cage I found that both sexes climbed to the ceiling to expand their wings and that the females both fluttered about before “calling” and called without moving from the place where they had expanded their wings. The male flies rather rapidly—more quickly than *D. trimacula* and *N. anceps*—and will ruin its wings in one night in a cage. It may be imagination on my part but I think the males of this species approach a calling female with greater haste than does *D. trimacula*. Males that I assembled in the wild were so intent upon reaching the female that they paid no heed to the lepidopterist. In the net, too, it seemed to me that the males were more lively than *D. trimacula*. Pairing is at late dusk, and on two occasions when I obtained pairings in the wild the moths separated shortly after dawn in one case and about 07.00 hours in the other. The only moth that I ever found was a male asleep in a chink on an oak trunk some eight feet from the ground. He was on the north side among lichen, and afforded about the best testimony to the virtue of procrypsis that I have come across so far.

In the wild the eggs are laid singly or in pairs on the under side of a leaf, and they hatch in a fortnight. They are not difficult to find and should be looked for on the lowest boughs, both near the trunk and—if it be a sheltered spot, that is to say shut in by trees on all sides—near the extremity of the bough. Search during the first week of May. My remarks about looking for eggs and young larvae of *N. anceps*

apply to *ruficornis* as well, and I have nothing to add to the advice there given. In a cage eggs are often laid in a lump: the absence of the ecological norm can produce strange happenings in a box or larva-cage!

Sexual selection obtains with this species. As the Rev. Mr Smith remarked: "The best chance of pairing is when a female has emerged one day before a male." But if you carry your virgin female in an assembling-cage to the spot where you found her as a larva you should have no difficulty: the right male for her is pretty sure to cast up.

Mr Smith, in the article in *Entom.* quoted above, makes rather a curious remark which is contrary to all my experience with this no less than with other species. "When we have got fertile eggs," says he, ". . . our difficulties are not ended. They will hatch, say, in twelve days, and unless their food is ready at hand they will refuse to eat." (What on earth does this mean? Eat what? How could they eat if their food was *not* "ready to hand?" Did he expect them to gnaw the box or larva-cage?) "As oak leaves are hardly opening yet," he goes on, "this is another difficulty." But what nonsense is all this! Does Nature condemn young larvae to starve to death by ensuring that there shall be an interval between hatching and the appearance of their food? In the wild the eggs of a lepidopteron hatch when food is ready for the larvae, that is to say according to the season of the year. If eggs be kept in a warm room they will hatch sooner than they would out of doors, just as in an indoor pupa-cage imagines will emerge and pair and lay eggs before there are any leaves on the trees. Nature cannot foresee, let alone prevent, the errors of lepidopterists. A further remark which that greatly respected and much beloved writer makes in the same article would seem to show that he was no more adept at breeding Lepidoptera than was South: "The moth does not always emerge the following spring, and then the pupa is apt to die. So that *N. chaonia* is hardly likely to become common." To this one can only reply, firstly, that in the wild the pupae of quite a number of species frequently survive two, three and even more winters, and, secondly, that the incidence of a lepidopteron in the wild is not determined by the rearing methods adopted by lepidopterists.

The pupa I have found only once, because the bases of the foodplant in those Welsh woods were quite impossible to search. Often the young oaks that harboured *ruficornis* stood on banks; commonly a tangle of herbaceous plants, brambles and hazel bushes grew close to the trunk on all sides; and there are no nooks and crannies formed by spreading roots, such a *D. trimacula* loves, to be found at the foot of young oaks. My solitary pupa was discovered when I had cleared a way right up to the trunk and, kneeling, was brushing away the dead oak leaves and debris with my hand. A leaf refused to be brushed away, and on investigating I found that it was adhering to a lightly buried cocoon. On disinterring this cocoon I chortled and stood upright; for it could belong to no other moth than *ruficornis*. It exactly resembled the cocoon of *trimacula* but was a little larger. A female moth emerged from it the following April.

With the Editor's permission I hope to deal with *Drymonia trimacula* in a further article.

COLLECTING IN WEST SURREY—1947.

By Colonel V. R. BURKHARDT, D.S.O., O.B.E.

If a hard winter is a prelude to a good butterfly season, 1947 left nothing to be desired. A record low temperature was experienced in the last days of January and, with the exception of a temporary clearance early the following week, trumpeted by the Meteorologists as the "Great Thaw," snow lay continuously on the ground from 23rd January to 12th March. The outlook was all the more gloomy for an almost complete absence of sun, which for one period failed to emerge for twenty-one days.

In the copses, the absence of bird life was remarkable, and only a few pairs of jays would be visible during a long walk. Of tracks in the snow the pheasant, with the trailing mark of the cock's spur, was most in evidence, but of the smaller fry there was not a sign. On the other hand, the village gardens were alive with chaffinches, sparrows, tits, and blackbirds, who brought their Bread Units to be cashed, and appeared unaffected by the hard weather. With the return of spring the shortage of *Pieris rapae* and *P. brassicae* may be attributed to their industry.

An exceptionally warm day on 16th January brought the larvae of *Euphydryas aurinia* up to sun themselves, but they then retired to resume hibernation till 18th March, when they began to take a somewhat languid interest in feeding. Vegetation was about a month later than of recent years, and honeysuckle was extremely hard to find. Sallow was not well in bloom till 9th April, the first day that *Polygonia c-album* was noted. Though scarce in 1946, this insect wintered well in captivity, and 75% survived in a cage exposed to all the rigour of the climate. In previous seasons a much higher bill of mortality has resulted from giving the cage the shelter of a loft.

Two *Gonepteryx rhamni* ♂♂ were seen on 10th April, and one *Aglais urticae*. The winter seems to have affected the latter species unfavourably, as it was extremely scarce. *Nymphalis io*, on the other hand, appeared rather more abundant.

Those insects which passed the winter in pupae appeared to have timed their emergence to suit the vegetation on which they depend for sustenance and oviposition. *Anthocharis cardamines*, *Pieris napi*, and *Pararge aegeria* were seen on 25th April. The spring brood of the latter was exceedingly short in the district. The day was very fine and warm, and the first *Euphydryas aurinia* ♂♂ pupated. A cold spell which succeeded, coincident with the flowering of the blackthorn, retarded pupation, which was not resumed till 4th May. Nests of the larvae had been taken between 4th August and 25th September 1946. The earlier batch was comparatively free from parasites, but the latter nests were very heavily ichneumonated. The earlier nests, however, were affected by a contagious disease, which manifested itself when the larvae were full fed, by their inability to pupate. They became a total loss. Of the remainder about 40% of the ♂♂ pupated, and the disease was not apparent until it was the turn of the ♀♀. There was heavy mortality in the pupal stage, and the proportion of ♂♂ to ♀♀ emergence was about ten to one. In the wild, the insect was about as abundant as last

season, and was widely distributed over the area. The proportion of ♂♂ to ♀♀ was very high.

Celastrina argiolus appears to have suffered heavily during the winter, for only one of the Spring brood was seen. *Leptidea sinapis* was out on 5th May in its usual haunts, but was scarcer than in 1946. *Pieris brassicae* was first seen on the following day, but not in its usual numbers. The first *Argynnis euphrosyne* was found on 11th May. The insect was widely spread all over the district, but was less abundant than last year. No marked variation was observed, beyond a certain number with a black discoidal cell. The usual "creams," for which Chiddingfold is noted, re-appeared, and four were seen, though only one was netted (28th May). A very hot spell of continuous bright sun, with day temperatures steadily increasing till it reached 94°, from 24th May to 4th June, brought out this insect with a rush, and hastened the emergence of *Argynnis selene*.

(To be continued.)

COLLECTING NOTES.

COLLECTING AT TORQUAY IN 1947.—On a warm dry night in January I made my first search for *H. oditis* and *L. putrescens* since the war. The result was one larva of each species and one *T. pronuba*. There was not a sign of *N. xanthographa* or any other larva. I think much torrential rain earlier in the winter combined with the precipitous and stony ground may have been the cause of this scarcity. Very soon severe frost set in.

At sallow the spring *Orthosias* were present in their usual numbers. The absentees were *C. vaccinii*, *E. satellitia* and *X. socia*. Searching honeysuckle, whitethorn, etc., in the spring with a lantern resulted in a few *B. repandata* and *gemmaria* larvae. There were none of the genus *Noctua* or *Triphaena* or even an *A. nebulosa*. I only saw one Comma butterfly the whole year; usually quite common.

Near Newton Abbot larvae of the genus *Hybernina* were uncommon, those of the *Notodontidae* were to be found in normal numbers.

At light during the summer insects were generally scarce especially *A. corticea* and *S. bilunaria*, in all broods.

Migrants were numerous. *N. obstipata*, two at light. *R. sacraria*, one shown to me by a young collector. *H. peltigera*, larvae common though mostly stung. *A. saucia* and *A. suffusa* more in evidence at ivy than usual.—Q. PARSONS, Torquay, 27th November 1947.

EXTRA BROODS.—With reference to Mr T. Bainbrigge Fletcher's note as to extra broods of Lepidoptera in 1947, I should like to mention that *Pararge megera* had a very prolific autumn brood here and was still on the wing as late as November 1st. *Plusia chrysitis* was about in August and September and *Leucania pallens* in October. As many as 30 *Colias croceus* were seen on November 8th, most of these being quite fresh. The autumn brood of *Lycaena phlaeas* lasted from mid-September to early November and was unusually plentiful.

The hot summer, however, seems to have had a very adverse effect on many of the usual Noctuids which are attracted by ivy and I have never known ivy so unprolific as it was this year at night although I

worked it on over 40 nights between late September and the middle of November. Several species that are usually common being quite rare or even absent.

Late moths, however, like *Brachionycha sphinx*, *Colotois pennaria*, *Erannis aurantiaria* and *E. defoliaria* have been considerably commoner than usual in November and December.—C. S. H. BLATHWAYT, "Amalfi," South Road, Weston-super-Mare.

CIDARIA OBSTIPATA IN GLOS.—A fresh specimen of *Cidaria obstipata*, Fb. (*fluviata*, Hb.) came to light on 16.viii.47 at Whitminster, Glos.—T. BAINBRIGGE FLETCHER.

COLIAS CROCEUS IN GLOS.—*Colias croceus* occurred commonly in Gloucestershire during August 1947 at Whitminster (Severn Valley, 60 ft.) and in September-October in my garden at Rodborough (600 ft.), where as many as 16 were seen on 12.x. The last, a male, was found on 5.xi.—T. BAINBRIGGE FLETCHER.

WINTER LEPIDOPTERA AT CHEAM.—The following have occurred locally between October 1947 and 13th January 1948:—12.x, *Colias croceus*; 12.x to 7.xi, *Oporinia dilutata*; 15.x to 17.xi, *Colotois pennaria*, continuously; 19.xi to 12.i, *Erannis defoliaria*, continuously; 22.xi to 12.i, *Operophtera brumata*; 4.xii, *Erannis aurantiaria*. *O. brumata*, *E. defoliaria* and *C. pennaria* have been abundant.—H. A. MORRELL, 63 Salisbury Avenue, Cheam, 12.i.1948.

A DISTASTEFUL SPECIES OF STENOTARSUS (ENDOMYCHIDAE; COL.).—This beetle was found in a nest of *Diacamma vagans*, F. Smith, situated in a rotten palm stem, lying under a hedge in my garden, at Sungei Patani, Kedah. It appeared to be actually inside the nest cavity. The beetle was confined in a glass tube, and the ants were introduced into a plaster nest. Twenty-four hours later I introduced the beetle into the outer chamber of the nest. (These ants often change their nest, and do not take long to settle down.) The beetle was very quick in its movements, and ran about in the nest keeping to the edges of the chambers. It soon made its way into the chamber where the ants were.

Most of the ants took no notice of the beetle. One or two paused, and examined it with their antennae. When this happened the beetle crouched down, drew in its legs and antennae under the margins of its body, and remained motionless until the ant passed on.

One ant attempted to seize the beetle in its jaws. It made one bite, and then drew away in evident distress, rubbing its mouthparts on the floor of the nest. The beetle went on its way unharmed.

Forty-eight hours later the beetle was still alive, and apparently unharmed. When *Diacamma* attacks another insect it at once uses its sting, after gaining a hold with its jaws, so if the beetle had been seriously attacked it would have been dead. However, a plaster nest is not a safe place for indifferently tolerated guests, so I withdrew the beetle to be put in the collection. Whilst it was in the nest I did not see the beetle feed on anything. It did not seem to be afraid of the ants, and did not avoid them. It remained in the chamber where the ants were congregated, and did not appear to be trying to avoid them.—G. H. LOWE.

PUPATION SITES FOR BRASSICAE AND RAPAE.—During the past season larvae of *Pieris brassicae* and *P. rapae* have, in our district, swarmed in fields of cabbage or turnip. The present notes are concerned with quite a small field of the latter in the Rotherham neighbourhood. On three sides this field is bounded by sparse hedges and fencing, but along the fourth side it is protected by a mortared stone wall varying in height from 3 ft. at the lower end to 8 ft. at the upper end. At the other side of the wall runs a main road, and directly opposite across the road, there is another similar wall.

Towards the end of September *brassicae* larvae were observed crossing the road away from the field and in early October pupae began to appear on the wall face. Most country walls in our district are of the "dry walling" type and larvae can pupate in the numerous deep crevices where they cannot be detected. In the present case, however, the larvae could only pupate in the more or less shallow eroded depressions on the wall face. On 10th October a search was made firstly on the wall furthest from the field. About 70 healthy *brassicae* pupae were detected, as well as a number of dead pupae and numerous clusters of ichneumon cocoons. Only three or four *rapae* pupae were found on this wall.

Since all these pupae must have formed from larvae which had climbed the field wall and crossed the road, a search was made of the field wall with anticipation of a still greater yield. On inspection, however, the scarcity of *brassicae* pupae was at once evident. Only about a dozen *brassicae* pupae were detected on this wall. This lack of *brassicae* was, however, more than balanced by large numbers of *rapae* pupae. Over 60 of these were quickly collected, and two or three times this number of dead pupae were observed. There were also many *rapae* larvae spinning up for pupation.

This accident of position of the two walls has given a good illustration of varying behaviour in larvae seeking pupation sites. In this instance it would seem that *rapae* larvae found the field wall at the limit of their pre-pupation travel, whilst most of the *brassicae* larvae reached the first wall before they had travelled their normal distance, and passing over, had sought further afield. The second wall happened to meet their requirements and to be at a more suitable distance.

The feeding positions of the larvae in the field give an obvious variable, and those few *brassicae* pupae found on the field wall may well represent larvae which had crossed much of the field. It also seems quite likely that *brassicae* larvae, which fed at the field edge, might have crossed both walls and wandered still further.—T. D. FEARNEHOUGH, 25 Ramsey Road, Sheffield.

THE year just passed has been a rather notable one in this area. On 15th June a single *M. stellatarum* was seen at rhododendron flowers and was seen once or twice during the following week and then disappeared only to be found some months later flattened by a push-up window in the house. Another specimen was taken on the 25th June on the east coast a little south of Aberdeen. On the 12th July a single *H. papilionaria* was taken a few miles from here. Nothing outstanding was noted till the end of August when an invasion began which lasted well into September. *Buddleia* was the main attraction and along with

the usual Whites and a few *V. urticae* were dozens of *V. atalanta*, *V. io* and *V. cardui*. The latter was in greater numbers than for many years. The prize of the season appeared in Johnstone about eight miles from here, where on 1st September the first *C. croceus* turned up. Several others were seen, and a further specimen was taken on the 6th. Both were males in reasonably good condition. On 3rd September a battered *Agrius convolvuli* was handed in also from Johnstone, where it had been killed with a shovel. During the remainder of September there was a heavy concentration of *A. suffusa* with a few *A. saucia* among them again making good use of the *Buddleia* flowers.—ALAN M. MACLAURIN, Oldhall House, Kilmacolm, Renfrewshire.

AUCTION SALE IN LONDON OF VARIETIES OF BRITISH BUTTERFLIES.—II.

By L. HUGH NEWMAN, F.R.E.S.

(Continued from page 8.)

An historic *galathea*, figured in "Barrett's Lepidoptera," and Ex Harper, Sidney Webb and P. M. Bright Collections, was knocked down for £9, and a gynandromorph of the same species, presumed to be unique, realized only £8, which was very little considering it was figured in Frohawk's "Varieties." But this insect is so similar in both sexes that a gynandromorph might easily be overlooked, and it may account for the lack of interest in the insect in question.

Another insect figured by Mr Frohawk, a lovely female albino *tithonus* taken at Salisbury in 1933 by R. Pitman, only fetched £8 10/-, but this was nearly twice as much as an albino *jurtina* sold just previously, but the "Browns" never stimulate much excitement amongst buyers at Auction Sales. But the "Blues" are a different matter; after the "Fritillaries" they are perhaps the most popular family. A gynandromorph *L. coridon* in bred condition taken in Sussex in 1939 by Mr Marcon, who specialized in this family, made £21, while a supreme male *radiata* also caught in Sussex by the vendor, made a pound more, i.e., £22, which is a very high figure for this form of aberration.

The "Coppers" are much in demand, although prices were nothing like that of the previous sale. Several specimens, single insects to each lot, fetched as much as £7, £7 10/- and £8 each, while most of the minor forms fetched over a pound each. Some more "Blues" completed this outstanding Auction Sale. A grand Irish gynandromorph *P. icarus*, left side male right side female, sold for £10 10/-, but an almost identical insect, the next lot, but with the sexes reversed to the previous insect, only realized half the figure, i.e., £5 5/-. The reviewer of this Sale is trying to find out the significance of this remarkable fact, but so far has failed to do so! Several fine *P. bellargus* varieties were offered, and an *ultra-radiata* made £11, and another of the opposite sex £10 10/-, while a mixed gynandrous female, heavily splashed with male coloration on the right fore and hindwings, made £9 5/-. As this insect was almost as striking as a halved example, it is surprising that it did not reach nearer twenty pounds.—L. HUGH NEWMAN, "The Butterfly Farm," Bexley, Kent.

EXCHANGES.

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Desiderata—Dipterous parasites bred from Lepidopterous larvae or pupae, or from any other animal.—H. Audcent, Selwood House, Hill Road, Clevedon, Somerset.

Wanted.—I need specimens of *Lycaena* (*Heodes*) *phlaeas* from all parts of the world, particularly Scandinavia, Russia, Siberia, Madeira, Canaries, N. Africa, Middle East countries, and E. Africa; also varieties from British Isles or elsewhere. I will purchase these, or offer in exchange good vars. of British Lepidoptera or many sorts of foreign and exotic Lepidoptera.—P. Siviter Smith, 21 Melville Hall, Holly Road, Edgbaston, Birmingham, 16.

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Wanted—Bristol board suitable for mounting Coleoptera. Also, Puton, A., 1878, "Synopsis des Hémiptères-Hétéroptères de France. Badonnel, A., 1943, *Faune de France*, No. 42, Psocoptères.—H. G. Stokes, 12 Roman Road, Salisbury, Wilts.

Wanted for Cash.—Tutt's *British Butterflies*, 1896: *Transactions and Proceedings Royal Ent. Soc. Ldn.* (must be almost if not quite complete).—Lionel Higgins, Linkwood, Woking.

For Sale.—Tutt's *British Noctuas*, 4 vols., complete: *Index Entomologicus*, by W. Wood, F.R.S., a complete illustrated catalogue of the *Lepidoptera of Great Britain*, 2 vols., half calf, pub. 1839, excellent condition.—Geo. Nicholson, Rosedale, 24 Nuns Moor Crescent, Newcastle-on-Tyne, 4.

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Wanted.—For the British Museum larval collection, larvae of Chrysomelid beetles, alive or preserved. Liberal exchange if required.—Dr S. Maulik, British Museum (Natural History), Cromwell Road, London, S.W.7.

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CONTENTS.

COLLECTING IN WEST SURREY—1947, V. R. Burkhardt, D.S.O., O.B.E., ...	25
LEPIDOPTERA IN WEST SUSSEX, 1947, G. W. Harper, R.N., F.R.E.S., ...	28
BUTTERFLY COLLECTING IN WOOD WALTON, HUNTS., AREA, THE CHILTERN HILLS, AND ROYSTON, HERTS., DURING 1947, H. A. Leeds,	33
BUTTERFLY COLLECTING IN 1947, H. J. Turner,	35
COLLECTING NOTES: Surrey Helomyzidae (Dipt.), L. Parmenter; A Note on Bred Specimens of Pegomya (Dipt. Muscidae), Id.; Forced Rearing of Erebia blandina (aethiops), T. D. Fearnehough,	38
CURRENT NOTES,	39
ERRATA,	40

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COLLECTING IN WEST SURREY—1947.

By Colonel V. R. BURKHARDT, D.S.O., O.B.E.

APR 12 1948

(Continued from page 21.)

The latter species showed practically no variation. One ♂ with heavily banded forewings was taken on 31st May and a minor "*confluens*" ♀ on 11th June, by which time most of the insects were getting very worn.

Pyrgus malvae was late, 13th May, and was fairly ubiquitous. An aberration with white borders to the forewings, more accentuated than var. *taras*, was taken by S.G.C.-R. on 21st May. *Erynnis tages* was first seen on the following day. *Pararge megera* was very scarce in the spring brood, and ♀♀ were positively rare. The ♂♂ were first noted on 24th May.

Early summer migrants were scarce in the district. *Vanessa atalanta* was first seen on 1st June, on which day the *hutchinsoni* brood of *Polygonia c-album* was on the wing. A few *Vanessa cardui* were seen during the first week in this month.

Argynnis cydippe was extremely scarce, and was late in appearance. In fact, *Argynnis paphia* was well on the wing before its smaller relation was observed on 21st June, on which day *Limenitis camilla* was also seen. The latter insect, and *Argynnis paphia*, show a welcome increase in numbers.

Plebejus argus was early, and quite a few ♂♂, with one or two ♀♀, were flying on 24th June. Colonies exist on the heather, which is abundant on the sandy massif which runs from Hurt Wood through Hascombe to the south of Farnham Commons. *Aphantopus hyperantus* was also early, and a dozen ♂♂ were seen in one field on 28th June. The species was less common than in 1946, and no variation was noted till 7th July, when several *flava*, *crassipuncta*, and an equal number of *caeca* were taken:

lanceolata appears to be very scarce in the neighbourhood, its place being supplied by the *crassipuncta* above mentioned. The black spots are almost as large as in *lanceolata*, but are elliptical in form instead of being pear-shaped, and the streak is replaced by a circular white spot. Female aberrations were far scarcer this year than male, in contradistinction to 1946, when it was the other way about. The first sign of variation was a good *lanceolata* on 19th July, and a very good *crassipuncta* on the following day. No ♀ *caeca* to correspond with a dozen ♂♂ was turned up till the 22nd, when a worn specimen was taken, and released. On the 24th, a fresh hindwing *caeca*, forewing normal, was taken when emergences had practically ceased. The species lasted a full month, though the weather was abnormally fine and hot. It was observed that the two best collecting days were overcast, with the sun struggling to penetrate heavy cloud. The worst conditions were continuous bright sun, and a high temperature. It appears that the ♀♀ must have shade. Those kept in a cage for breeding died if exposed to hot sun. In the wild, the ♂♂ do fly about the short grass, presumably searching for emergences, but the ♀♀ stick close to the trees, and, when not feeding on bramble, retire to the shade.

Apatura iris was fairly widely reported in the district. A small boy caught one in his hands, and brought it to a local farmer on 7th July. The same afternoon a ♀ was observed eight miles to the west flying slowly across an open space. ♀♀ were also reported near the first locality on 22nd, and a ♂ flew into a garage between Cranleigh and Guildford on the same afternoon.

On 12th July the summer brood of *Leptidea sinapis* was observed near Chiddingfold, the area of its greatest abundance, but, as little work was done in this district at this time of year, it is impossible to state whether it was in its usual numbers. It is not so prolific east of Alfold, but a few isolated specimens were encountered. On 13th July a visit to the Aldershot area resulted in the identification of a single *Thecla quercus*, *Gonepteryx rhamni*, and *Eumenis semele*. *Thecla quercus* was very scarce this year, after a bad season in 1946. *Gonepteryx rhamni* was fairly abundant, and ubiquitous. The summer brood of *Pararge aegeria* was first noted on 19th July, the species having picked up in numbers compared with the Spring emergence.

Of the Pieridae, enormous numbers of *rapae* immigrated from the continent during the month, and, about mid-July, people reported seeing them in white clouds. *Pieris napi* was very abundant, and *Pieris brassicae* well represented. *Nymphalis io* must have suffered from natural enemies, as the summer brood did not realise the anticipations of the vast number of larvae. In one meadow at least a dozen nests were counted. One of these was brought in when so small that it was difficult to recognise from *Aglais urticae*, and practically all emerged as perfect imagines. Another batch of fifty, nearly full fed, was unfortunately allotted a cage which had been used for the diseased *Euphydryas aurinia* two months previously, and all probably contracted the malady, although this is merely an assumption.

Vanessa cardui was on the wing on 16th July, and was much in evidence in the clover fields at the beginning of August. *Maniola tithonus* was early, 13th July, but distinctly scarcer than last season. Of the Lycaenidae, *Polyommatus icarus* was conspicuous by its entire absence, there having been no recovery from the failure of the Spring brood. *Lycaena phlaeas* picked up slightly, but was distinctly uncommon.

On the North Downs *Lysandra coridon* was flying on 16th July when forty ♂♂ were counted before a thunderstorm, complete with cloudburst, put an end to the investigation. In the Winchester district there has been a wonderful recovery in the strength of some colonies. In one case this is probably due to the fact that cattle have been grazing on the down, and have eaten down the masses of long grass which had choked out the *Hippocrepis comosa*. Prior to the war this locality used to support a flourishing colony of *Lysandra bellargus*, and it will be interesting to note whether this makes a similar reappearance. These strong colonies of *Lysandra coridon* showed very little variation from type, and were distinctly disappointing from a collector's point of view. Thousands of insects were examined, practically all true to type, and even an *obsoleta* was of rare occurrence. It was more profitable to turn one's attention to *Colias croceus*, which was well represented. During the first week in August the species was quite abundant, with a good proportion of ab. *helice*. About a dozen of the latter

were taken between 1st and 5th August on one down by three collectors, and five more were acquired in a roadside clover field on the homeward journey. Oddly enough, when the field was first prospected at about 3 p.m., thirty ♂♂ were netted before a single ♀ was turned up. An hour later, the ♀♀ appeared in some numbers, with a very high proportion of "*helice*."

The *helice* captured between 1st and 5th August began to deposit on 7th, and those taken on 8th on the 13th of the month. Pupation began on 1st September. A large number of larvae were feeding up and in pupa on 23rd September, when the majority were killed by a severe ground frost, and few emergences occurred after this date. Period of emergence was between 12th September and 6th October, the totals being 175 ♂♂, 100 normal ♀♀, and 115 *helice*.

With the exception of the three Lycaenidae, *Lysandra bellargus*, *Polyommatus icarus*, and *Celastrina argiolus*, insects which ran to a second or third brood were favoured by the exceptionally fine summer. On 17th August quite a strong contingent of *Pararge aegeria* was on the wing. *Pararge megera* improved in numbers in the early days of the month, and produced a third brood on 21st September. A small brood of *Argynnis selene* appeared in the Horsham District on 20th August, while a single ♀ *Ochlodes venata* was taken as late as 2nd September. This insect had not been seen since July, when it was abundant. On 22nd September a fresh ♂ *Limenitis camilla* was netted, leading to the supposition that a few larvae had fed up, encouraged by the continuous sunshine, and had produced a limited second brood.

The feature of August and September was the third brood of *Pieris rapae* and *Lycaena phlaeas*. The former started to emerge in the last week of August, and swarmed in gardens and clover fields for a month. Over a dozen ab. *fasciata* were taken, and two were reserved for breeding. Ab. *praeterita*, Krül., was not uncommon, and three or four specimens of *fasciata* plus *nigripuncta* were secured. Ab. *novangliae* was seen, but missed, but three ♀♀ with a strong inclination to yellow were taken. Ab. *immaculata* was rare, and only found in damaged condition.

Lycaena phlaeas started emerging for the third brood on 1st September, and was ubiquitous, though only a few strong colonies were discovered, mainly where large patches of fleabane grew alongside the high road, or in damp corners of meadows. One colony only showed a tendency to vary. Three *radiata* ♂♂ were taken, and quite a number of ab. *intermedia*. Dark ♂♂ were not uncommon, and several with reduced spotting on the forewings, approaching ab. *bipunctata*, were found. It was disappointing that none of the colour forms of *alba* or *schmidtii* were observed, though large areas were covered in inspecting various colonies. There was little underside variation. A single *infra-radiata* with elongated spots evenly distributed along the margin was taken.

The Autumn brood of *Aglais urticae* was exceptionally strong, and showed no sign of variation whatsoever. Its peak was the third week in August, after which hibernation began and numbers grew consistently less day by day.

A sort of Indian summer set in during the first fortnight of October. Fresh *Lycaena phlaeas* continually emerged but showed no sign of variation. The wild brood of *Colias croceus* was not plentiful in the district, but a few fields of clover, still in flower, were the centre of attraction. About a dozen *helice* and *helicina*, the latter predominating, were found, and underside varieties were not uncommon. *Ab. fischerii*, Braun., with the pupillated discoidal spot on F.W. underside, was frequently met with. An extreme example of *ab. geisleri*, Bryk., whose tear-shaped central blotch on the hindwing underside reached the rusty inner marginal spots, was taken on the 12th. The form in which these spots are absent—*ab. semi-demarginata*, Pionneau—was also turned up. *Ab. seriata*, Rocci, was not uncommon, and one extreme specimen was netted. A single example of *ab. niedecki*, Strand, with the single spot instead of the usual "8" of mother-of-pearl, was taken in a rather damaged condition.

The last fresh *helicina* was seen on the Wealden Clay on 24th October, but numbers of *Colias croceus* and *Lycaena phlaeas* were flying on the chalk downs close to Guildford on 7th November. The former insect was reported as still on the wing in widely separated areas (Dorset to Newmarket) as late as the 23rd of the month, and several southern migrations were recorded in the Press.

LEPIDOPTERA IN WEST SUSSEX, 1947.

By Commander G. W. HARPER, R.N., F.R.E.S.

1947 will long be memorable for the severity and length of its Winter, and equally the warmth, dryness, and length of its Summer.

Generally speaking, therefore, it was to be expected that early Spring insects would have appeared about three weeks late, followed by a rapid acceleration of development, culminating in additional Autumn broods of some species. These effects were, in fact, observable, with the very pleasing unpredictable addition of many migrant species arriving here and breeding successfully. It was a notable year in Sussex for the profusion of *Colias croceus*, with an unusually high proportion of the ♀ *ab. helice*; for the establishment of the rare migrant *Rhodometra saccharia*, which bred right up to the end of October, and for the occurrence in large number also of *Agrius convolvuli*, *Sesia stellatarum*, *Nomophila noctuella*, and *Pieris rapae*.

Endemic species on the whole also staged a good recovery in numbers of individuals, *Heodes (Lycaena) phlaeas* being conspicuously abundant in its Autumn brood with considerable variation.

JANUARY. The year began with a mild three weeks. An emergence of *Operophtera brumata* occurred, and a single ♂ *Erannis leucophaearia* was seen on 22nd, when the severe winter weather clamped down on most winged activity until March was well advanced.

MARCH. On the 11th a very slow and intermittent thaw started, resulting in the worst floods for many years. Temperatures remained too low to permit emergence of the early spring species until 16th, when ♂♂ *E. leucophaearia* and both sexes of *E. marginaria* were found

on tree trunks in the woods. The last week of the month saw emergences of most of the early Spring moths; noteworthy were the abundance of *Apocheima hispidaria* at light, and corresponding scarcity of *Phigalia pedaria*, the usual state of affairs being reversed. *Polyploca flavicornis* and *Brephos parthenias* were out in their usual numbers by the 25th, but went over more quickly than usual. On 28th a short visit was paid with Commander Hollebhone to Aviemore in the hope of seeing *Brachionycha nubeculosa*; we were not disappointed, and found newly-emerged specimens, mostly males, in various stages of development low down on the birch trees each afternoon until we left on 2nd April. This species is the only one found to be little retarded by the severe winter weather this year; *P. pedaria* was the only other species found near Aviemore at this date.

APRIL. By the 7th *Eriogaster lanestris* was emerging in numbers in my "cold" cages, whereas the normal date and for "warm" cage pupae is February. The Quakers and *Alsophila aescularia* were very abundant by this time, although the willows were only just beginning to blossom; *Nothopteryx polycommata* and *Biston strataria* were unusually common also on this date. The first hibernated butterflies, a few *Gonepteryx rhamni*, *Nymphalis io*, *Aglais urticae* and *Polygonia c-album* were enjoying themselves in the sunshine on the 9th. By the 12th *B. notha* was flying round the aspens in good numbers, and the willows were swarming with the common *Orthosia* at night; this attraction only lasted a day or two longer owing to the rapid development of Spring after the prolonged cold. *Lycia hirtaria* began emerging on 20th and coming to light, and on 24th I took the first and only *Polyploca ridens* at light. The rapid advance of vegetation during the last week of the month was amazing; daffodils were going over, while Blackthorn was blossoming fast, and the first *Euchloë cardamines* and *Pieris napi* were flying; swallows and house martins appeared only at the very end of the month.

MAY. The month started with rather a cold week, during which the blackthorn reached full blossom, the latest I have ever known it; warm weather then set in and a glorious season that never looked back, all forms of wild life developing with great rapidity as if to make up for lost time. *Saturnia pavonia* was well out by the 9th, assembling in large numbers to a Scottish bred female, while an enormous female caused me great excitement by coming to the lamp at midnight, which attracted all the usual late April and early May moths. Larvae were very small and backward and not very numerous. *Argynnis euphrosyne* did not appear until the 13th; on the 15th *Celastrina argiolus* appeared, but in small numbers, and by the 19th *Smerinthus populi* and *Spilosoma lutea* (*lubricipeda*) were coming to light, followed by a rush of species; *Notodonta anceps*, *Lophopteryx capucina*, *Tyria jacobaeae*, *Eilema sororcula*, and many others, were attracted to light in spite of cold nights on the 21st and 22nd. Two Geometrids were unusually abundant, *Cepphis advenaria* and *Pseudopanthera macularia*, which swarmed in the woods and clearings. Larvae by now were much more numerous and growing fast, and a heat wave set in lasting into June which accelerated development even further, so that "leeway" due to the cold and late winter was soon made good.

On the 30th a short visit was paid to Northamptonshire, where I found that this progress had beaten me to it! *Carterocephalus palaemon* was abundant in several woods, and well past its best, even the females being worn.

JUNE. Returning to Sussex on 2nd, the heat-wave reached its maximum with shade temperatures of 90°. *Argynnis selene* was now emerging in numbers, *A. euphrosyne* going over. The latter proved more variable than usual, with a not uncommon tendency to coalescence of the upper-side black spots. Summer had arrived with a rush, and although the heat-wave ended on 4th with a severe thunderstorm and several cold wet days, the rest of the month was fine. Light proved fairly attractive, prominent species being *Boarmia roboraria*, *Spilosoma lubricipeda* = *menthastri*, *Tyria jacobaeae*, and *Bupalus piniarius* by day including numbers of the white "Northern" form. Sugar on the other hand was disappointing. The first migrants seen were two *Heliothis peltigera* at valerian on the 21st, while on the same day *Sphex bembeciformis* was emerging in large numbers on the consequently stunted Poplars in my garden. In the pine and heather country *Diacrisia sannio* and *Perconia strigillaria* were abundant during the next week, and *Hyloicus pinastri* was found on the 27th and also later. Larvae of this fine moth were beaten from the Scots Pines later in the year, and also several pupae were dug in November, so that it is clear that the species is well established in West Sussex. On the 27th *Plebeius argus* was flying in fair numbers, and *Limenitis camilla*, *Argynnis paphia*, and *Aphantopus hyperantus* were also emerging. On the 29th *Apatura iris* was seen flying over oak trees, this early date demonstrating very well the accelerating effect of the hot spell on the Spring larvae. The larvae of *Clostera curtula* on aspen and of *Panolis flammea* (*piniperda*) on pine were unusually abundant by the end of the month.

JULY. The first twelve days were cool, windy, and without much sun; the common species were well represented on the whole with one conspicuous exception, *Argynnis cydippe*, which failed to put in an appearance either in June or July except for an odd specimen here and there. *Apatura iris* was much commoner than usual, several being seen on various occasions throughout the month; a slightly worn male was captured at cow dung as early as the 6th, and a great thrill on the 24th was the capture of a pair, male and female, with one stroke of the net as they descended in a courtship flight from the top of an oak. The female was slightly and male very worn at this date. *Argynnis paphia* was very abundant this year, *Limenitis camilla* about average. A fine var. *semi-nigrina* female was taken by my son on the 13th. *Nola albula* was by no means uncommon in two or three limited localities throughout the month, and the lamp continued to be attractive on suitable nights throughout the month, but these were by no means the warmest or most obviously suitable! A number of males of *Gastropacha quercifolia* were found on illuminated road signs during the month, and *Eilema complana*, *E. deplana*, *E. griseola* and *E. lurideola* were all present in above average numbers, as also were the Geometrids *Lygris testata*, *Selenia bilunaria*, and other common species. For the first time for some years the second brood of *Lycaena phlaeas* was moderately common in suitable spots, auguring well for the autumn,

but *Lysandra coridon*, emerging towards the end of the month, remained comparatively scarce in most localities. A second heat-wave started on 22nd and continued into August, and on this date and subsequently a considerable number of *Colias croceus* appeared with the usual small proportion of var. *helice* females. The earlier immigrants were not observed, but from this date onwards one of the most remarkable seasons for this butterfly was to be experienced. *Colias hyale* on the other hand remained scarce, one being taken on 31st, another in August by my son, and a third in September.

AUGUST. The second brood of *Leptidea sinapis* was well out by the 1st, earlier than previous years—further evidence of the rapid development of insects this summer. Investigation of the reed beds showed *Nonagria geminipuncta* emerging also during the first week, while *N. typhae* was interesting in that full-fed larvae, pupae, and imagines were all found at the same date. *N. algae (cannae)* imagines came to light in small numbers on the 13th in fairly fresh condition, while *N. sparganii* were abundant on 18th, in particular the lovely red form. Butterflies continued to increase during the month; *Lysandra bellargus* second brood was well out on the 12th, *L. coridon* remaining thin; *Aglais urticae*, *Vanessa cardui*, and *Nymphalis io* abundant in clover fields, while *V. atalanta* increased steadily until it was abundant in September. On the 14th at dusk, at least a dozen individuals of *Sesia stellatarum* were busily feeding on valerian on the sea-shore; they were somewhat worn and probably migrants, for this species became extraordinarily abundant at the end of September with freshly-emerged specimens. Other migrants now began to make their presence felt; on 16th a male *Cidaria obstipata* was taken sitting on a rush head at night; on 22nd a great thrill was the first of many *Rhodometra saccharia* taken in a clover field; and on the 25th a *Laphygma exigua* was found on an illuminated road sign. It was now clear that a remarkable autumn for migrants might be expected, and this hope was fully justified. In the meanwhile the early autumn moths continued to appear very early—*Hydraecia micacea* on 16th, *Ochria ochracea (Gortyna flavago)* (quite worn) on 25th, *Atethmia centrargo = xerampelina* on 28th. *Hadena trifolii* was abnormally abundant this month. Larvae were numerous, several species not often seen being found in large numbers, *Lophopteryx cucullina*, *Bena prasinana*, and *Colocasia (Demas) coryli* in particular; the latter was found feeding on oak, beech, birch, and maple everywhere; all these species were still small by the end of the month, during which no rain fell at all!

SEPTEMBER. The drought was only broken by a little drizzle and a few showers in the middle of the month, the rest being glorious sunny weather. The third brood of *Lycaena phlaeas* began emerging on the 6th, and this lovely insect was extremely abundant, a fourth brood appearing towards the end of October. *Colias croceus* went on from strength to strength, the most interesting feature being the increasing percentage of the female var. ab. *helice* as the season advanced. For example, on 22nd, a small clover and stubble field was seen to be well tenanted with *C. croceus*, and in a bare hour twenty-five ab. *helice* were netted and boxed; after examination, of course, most were released, but all were in fine condition, and of all grades between normal and ab.

pallida. This is thought to have been the peak of the third brood, although these overlapped considerably. Other migrants that were present in considerable numbers, or their offspring, were *Pieris rapae*, *Nomophila noctuella* (in profusion), *Sesia stellatarum* (in profusion), *Vanessa cardui*, and *Rhodometra sacraria*. The latter was breeding in stubble fields, and ova obtained and successfully reared on dock. On the 20th no less than four fine freshly emerged *Agrius convolvuli* were taken at dusk feeding on petunias, and six others within the week. Light was only moderately attractive, plenty of *Asphalia diluta* being the principal customer. Sugar failed completely. *Plusia gamma* was the only migrant notably scarcer than usual, both by day and night. On the 16th my son took a magnificent aberration of *Lycaena phlaeas* with dark borders of front wings extended over the outer row of black spots, which were elongate; other minor varieties were also not uncommon. *Agrotis saucia*, probably due to earlier immigration, was abundant also, and later at ivy blossom, which was well out by the end of the month, but failed to attract much else. The month ended with a classic cross-country chase and capture of a male *Colias hyale*, the only one seen in the autumn.

OCTOBER. The splendid sunny weather continued almost the whole month, with cooler nights only and light frosts occasionally towards the end. *C. croceus* continued in slightly reduced numbers to gladden the countryside, and the clover fields and waste ground also held a very numerous Autumn brood of *Anaitis efformata*. *R. sacraria* continued to be found in single specimens up to the 22nd. Autumn moths found included *Polia flavicincta* in good numbers, *Orgyia antiqua*, *Oporinia dilutata* and *O. christyi*, and *Chesias legatella* (*spartiata*) was found sitting on the broom twigs after dark on the 22nd. Ivy blossom was still unattractive on the whole, and no "sallows" were attracted. Fresh *Lycaena phlaeas* were emerging on the 13th and later, and three examples of *C. obstipata* were taken in the garden during the month.

NOVEMBER. In spite of heavy rain and gales at last during the first week, a few *C. croceus*, including ab. *helice*, emerged and were flying afterwards, the last seen being on 13th. *Colotois pennaria* was frequenting the street lamps in average numbers on the 12th, *Brachionycha sphinx* on the 13th, and *Erannis aurantiaria* and *E. defoliaria* were abundant on the 22nd, and continued in many fine forms until the end of the year. The third week of the month was incredibly warm, over 60° F. at night!

DECEMBER. This wonderful season ended with a profuse emergence of *Poecilocampa populi* on the 13th, both sexes coming to light, together with extraordinary numbers of *E. defoliaria* and *Operophtera brumata* which quite smothered the road signs and street lamps. So ended a year which will always be memorable for its amazing weather in Winter and Summer, its migrant Lepidoptera, and glorious field work.

**BUTTERFLY COLLECTING IN WOOD WALTON, HUNTS., AREA,
THE CHILTERN HILLS, AND ROYSTON, HERTS., DURING 1947.**

By H. A. LEEDS.

The year 1947 in its commencing months was notable for extremes of cold and snow, followed by floods and gales. During May and continuously into November the rainfall was slight and the summer very hot and sunny. By October wells were dry in many places; Manchester and Birmingham water sources were nearly exhausted in November. Intermittent frost and snow occurred 1st-23rd January, on and from the latter date snow covered the ground for a period of 53 days until 16th March, when at night a gale with rain caused much damage to roofs and houses. A rapid thaw with more rain added disastrous flooding in many parts of England, inundating houses, farms and thousands of acres of land in the fen districts, where, owing to banks of rivers breaking, pumping and repairing of the breaches extended over many weeks. Part of Wood Walton Fen was flooded, including the Nature Reserve, but, as in the first year when the Dutch Large Copper *batavus* was introduced, the flooding of its larvae had no detrimental effect and there is a rumour that some larvae were collected this year for placing elsewhere.

Snow-ploughs and R.A.F. jet machines failed at one period to keep the roads passable and manual shovelling of the deep drifts of snow enabled a heavy lorry to haul a tractor load of bread from Sawtry to Wood Walton late on a fifth day from the previous supply; to obtain sufficient the loaves were crushed to a width of two inches and were accepted with gratitude. Many houses were without coal at that time and it took eight days before two lorry loads could get through from Abbots Ripton station.

Frosts were almost continuous for 52 days and reached the lowest records for England on 23rd to 25th February. In Hunts., Hemingford Abbots and St Neots noted 34 degrees of frost, and Brampton 32. Officially it was the longest and coldest period since 1895. Snow fell frequently and each clearance left a most slippery road surface.

Owing to the wet harvest and following months of 1946 and the further deplorable conditions for farming no land could be prepared and sown until late in 1947, and even where this could be done the yield was mainly poor, although the hot and dry summer was helpful; barley was the best crop, but wheat and potatoes less than half the average, oats worst and so light that many fields were cut when green and provided fodder for cattle as a supplement to the dried-up grazing grass; later on the yield of milk rapidly declined. Summer and later cabbages were spoiled by larvae of *P. brassicae* and the more numerous *rapae*; immigrants of both species apparently reached here.

The British estimate for sugar-beet is three million tons, crops are lighter and there is less acreage than in 1946 when the quantity somewhat exceeded 4,700,000 tons, it was then the only main crop which benefited from the wet season. Food rations were less than during the war, and potatoes, 3 lb. per head weekly, included in November 1947. Spring blossoming was late, 29th April blackthorn, plum and pear;

12th May Horse-chestnut trees, 10 days later than 1946 and 31 days later than in 1945; 18th May whitethorn. No frost occurred during May and fruit crops were good.

The ordinary hibernating species well survived the extremes of rain, snow and frost, and on the first sunny and warm spring day of 10th April the following were noted: 6 *P. c-album*, 5 *A. urticae*, several *N. io*; both of the latter became common later.

In a previous article, Vol. LIX, page 76, I mentioned that I believed *G. rhamni* definitely hibernated on 28th September 1946; none was afterwards seen until 10th April 1947, when 30-40 appeared. For some unknown reason their progeny were rarely seen, viz., 6 males and 4 females, the last one, a female, on 3rd October 1947 in Hunts.; none seen elsewhere by myself.

Appended are first appearance dates, with some remarks as to scarcity, etc.

26th April, *C. argiolus*, almost continuous in Hunts. until 16th September.

5th May, *P. rapae* and *P. brassicae*; 7th, *P. napi*; 12th, *A. cardamines*, less than usual; *C. rubi*, only four seen; 16th, *H. (L.) phlaeas*, only two in first brood, few in second, hundreds in third, and apparently a somewhat numerous partial fourth brood; 26th, *P. aegeria*, two worn, others at various dates later; 27th, *P. malvae*, very scarce; *C. pamphilus*, fairly common and continuous until early part of autumn; *P. megera*, first brood, second commenced 30th July, a third brood 24th September, and many flying during October. 31st May, *A. agestis*, rather scarce in first brood, second brood began 26th July; emergence was not plentiful in Hunts., but continued into mid October; *P. icarus*, very limited and ordinary in Hunts., possibly the wet and almost sunless periods during their emergence in 1946 provided very little opportunities for pairing and depositing ova, the second brood then had only one day of sun, i.e., 26th August, on which day 80 very fresh were examined in one part of the railway cuttings. That part was regularly visited in the spring of 1947 and only three males seen there.

1st June, *E. tages*, many emerged that day prior to a thunderstorm, their attitude of resting with downwards sloping wings caused much washing-off of the scales by pouring rain. Curiously they all seem to have emerged that day as during the following hot days I could not find a single one unwashed.

2nd, *O. venata*, less than usual; 10th, *S. pruni*, in fair quantity and widely spread in Monk's Wood, no frost occurred in May to kill the larvae after several years' depletion in that month, the fine and hot weather was also beneficial and caused an early emergence; 11th, *P. c-album*, not many; 13th, *M. jurtina*, less in quantity and bleached forms very rare; 22nd, *A. paphia*, fair quantity; *L. camilla*, three then and several afterwards in Monk's Wood, apparently establishing themselves after only being seen oddly since the first appearance in 1941, the larval food-plant, honeysuckle, abounds; 24th, *S. w-album*, scarce, *V. atalanta*, a female drying its wings, the bulk were much later and common; 25th, *A. cydippe*, fair number; 26th, *M. galathea*, not seen plentifully as the roadsides grass verges were cut before emergence and

most of them quickly went away; 27th, *A. urticae*, very numerous and ordinary, not one kept for variation; *T. quercus*, uncommonly seen around oaks; *A. hyperantus*, exceptionally plentiful.

4th July, *T. sylvestris*, unusually scarce; 11th, *T. lineola*, only few locally; *M. tithonus*, less plentiful, some with the extra spottings of excessa forms; 17th, *N. io*, common; 21st, *G. rhamni*, very scarce; 22nd, *C. croceus*, males common afterwards August-October, and a fresh one taken on 5th November, females scarce and only about 2 or 3 per cent., one female on 11th August had white forewings but was torn and released; 26th July, *V. cardui*, commonly seen until late October; 29th, *A. aglaia*, female very worn, there is now no suitable field left for breeding within my walking limit, the Nature Reserve is too distant but possibly they and *A. selene* still occur there; 31st, *T. betulae*, scarce.

No *C. hyale* seen. Humming-bird Hawk Moths, *M. stellatarum*, were common.

In connection with *A. euphrosyne* none was seen by three local collectors nor myself until 12th June, when numbers of them appeared in every riding of Monk's Wood; they were considerably worn and possibly came from elsewhere seeking suitable clearings; such places with wild violets growing are at present very limited in that wood. In 1946 extensive clearances of brushwood was done in the adjacent Bevil's Wood, but I found the clearings covered by an abundant growth of Meadow-sweet; this surprised me as usually in these woods clearance is conducive to the growth of violets and low plants, soon *euphrosyne* would find it and thrive. Some years ago a clearance was made at the western end of the main straight riding in Monk's Wood and *euphrosyne* had bred there up to 1946, it is now rather bushy and no fresh ones could be found this year, but on 17th June many of the worn females had congregated there.

(To be continued.)

BUTTERFLY COLLECTING IN 1947.

By HENRY JOHN TURNER.

The following is a summary of my collecting experiences during the past season 1947. From various sources one hears and reads of the great abundance of insects last summer but during my own wanderings I found little to support this view. In fact, but for the timely arrival of large numbers of *Colias croceus* and other migrants from the Continent I venture the thought it would have been a very poor season indeed, as, for instance, the scarcity of *A. selene*, *A. euphrosyne* and *A. paphia* in the New Forest appears to illustrate; also on the Downs in Dorset and Wilts. I noticed a considerable fall in numbers of *P. megera*, *L. coridon* and *L. bellargus* in some of their haunts compared with a few seasons ago. Probably this is the result of the very wet season of 1946; should this be so, the wonderful weather of last summer may go a long way towards restoring these butterflies to their former abundance.

The following notes refer mainly to butterflies, as very little opportunity was presented of mothing. 7th April, near Salisbury, the hibernators *N. io*, *A. urticae* and *G. rhamni* were on the wing in the bright sunshine, but no sign of *P. c-album*, usually fairly common in the area. 9th April, at Brockenhurst in the New Forest, we saw very few *G. rhamni* and *N. io*, and only two *P. c-album* in the Parkhill inclosure; this species is far less common than it used to be in this locality; we noted *B. parthenias* flying high round the birches in Hollands Wood. 13th April, at Bodenham, near Salisbury, many *P. c-album* were seen flying round the willows; *urticae* and *G. rhamni* were also common and larvae of *C. dominula* were plentiful on comfrey. 27th April saw us on the Downs near Blandford, where we found full-fed larvae of *E. aurinia*, where it is certainly not so common as it used to be; we noticed a fresh-looking *V. cardui* on dandelion flowers and a number of *C. rubi* flying around bushes; some miles further west we found another small colony of nearly full-fed *E. aurinia* larvae; these pupated during the next few days and only a very small number proved to be ichneumonated. In the New Forest on 4th May we found larvae of *L. camilla* just out of hibernation and still very tiny. At Ringwood on 6th May in very warm weather little was on the wing: a few *E. nanata*, *E. atomaria*, *D. falcatoria* were flying over the heaths and no sign of *H. papilionaria* larvae that we found so common here last year; next day in a northern part of the New Forest *P. brassicae*, *P. rapae*, *P. napi* and *P. aegeria* were flying in the rides; we also saw our first *V. atalanta* for this season and found *L. camilla* larvae common on honeysuckle. On the 12th May *E. cardamines* and *L. argiolus* were just appearing in the New Forest together with the usual hibernators. On the 19th May we motored to the Wareham area, where, despite a fine day, little was on the wing except *M. rubi* flying rapidly over the heather. Back in the New Forest on the 21st May we found *A. euphrosyne* out in the Burley and Brockenhurst areas but most decidedly scarce and no sign of variation. *N. lucina* was more common than I have ever seen it in the Forest for a long time; *P. brassicae*, *P. rapae*, *P. napi*, *E. tages* and *S. malvae* were to be seen everywhere, but *L. argiolus* and *E. cardamines* continued to be scarce throughout the area; we found larvae of *G. rhamni* extremely common everywhere on buckthorn bushes. 1st June found us in Surrey, where in very warm conditions *A. selene* and *A. euphrosyne* were well out but in considerably fewer numbers than in previous seasons; I secured a few minor forms but I heard of no extreme aberrations being taken; *V. atalanta*, *V. cardui* and *C. croceus* were to be seen in odd numbers in the district, and in the woods we were pleased to find *E. aurinia* and *L. sinapis* on the wing; we were also surprised at the number of *A. villica* flying about in the hot sunshine. On 4th June we motored to the Peterborough district and found insects very scarce indeed and were disappointed in finding *C. palaemon* had passed over a week before; I took a worn female of this species that promptly deposited some two dozen ova; these hatched out ten days later but soon died off from some unknown cause; we found pupae of *S. pruni* on sloe; these later emerged, four males and three females. We were successful in beating larvae of *T. betulae* from blackthorn bushes in Huntingdon district; *P. aegeria*, *P. megera* and *V. cardui* were also seen in this area.

On 8th June we journeyed into Norfolk where after much wandering about we were delighted to find *P. machaon* flying commonly over the reed beds; we soon secured a few females but promptly released them on finding both the ova and larvae on its foodplant all around us. We took a few of each and subsequently found them easy to rear on ordinary carrot leaves; they duly pupated; some emerged in the autumn and the remainder held over until next season, 1948. The next few days we spent watching this fine insect on the wing. 12th June we went on to Wicken Fen but found little to see but 2 worn *P. machaon* and a few *O. venata*.

We returned home on the 14th June and spent next day in the New Forest. We found *A. selene* just emerging and, although scarce, worn specimens were still to be seen as late as 6th July; we also motored into Dorset but found insects decidedly scarce; back in Bournemouth we saw *M. stellatarum* hovering over pinks in the garden, from then on becoming increasingly common. On 25th June *A. cydippe* and *A. paphia* were just appearing in the New Forest. By the 29th June these were well out, with the former species predominating; var. *valentina* and *A. aglaia* were scarce; *M. tithonus*, *M. jurtina* and *A. hyperantus* were widely scattered throughout the Forest but nowhere as common as formerly; during this period *L. camilla* was in evidence everywhere, but vars. of any of the above species were not forthcoming. On 7th July a small colony of *P. c-album* was noted near Park-hill and odd specimens of *T. quercus* flying high over the oaks, while on shallows we found larvae of *N. ziczac* and larvae of *D. vinula*. 15th July we were in the Swanage area: *M. tithonus*, *M. jurtina*, *E. semele*, *A. aglaia*, *S. galathea*, *L. coridon*, *A. sylvestris*, *A. acteon* and *O. venata* were all present in the Ballard Down area but we saw little on the clover fields nearby; from this date on we transferred our activities to the district around Salisbury where on the clover fields and Downs *C. croceus* and var. *helice* became increasingly common; we secured several var. *helice* and these deposited on lucerne and eventually a fine series of *pallida* forms of *helice* were bred. We also captured a number of minor *obsoleta* forms of *L. coridon*, including a fine example of var. *syngrapha*; two more of this form were seen but not taken because of their worn condition. It was on 3rd August that I was fortunate in taking a fine male ab. *belisarius* of *V. io* in perfect condition. A notable feature of August too was the number of bleached forms of *M. jurtina* we secured; in August also we noted five species of the "Blues" on the wing, including second brood *C. minimus* and *L. bellargus*, in addition it is worth mentioning *H. phlaeas*, *C. pamphilus*, *V. urticae*, *V. cardui*, *V. atalanta*; therefore, we were astonished on making two excursions into Dorset to find most of the above extremely scarce and almost non-existent in areas where they normally abound. 20th August, at Badbury Rings, near Wimborne, the clover fields were swarming with *C. croceus*, but few var. *helice*, and we were surprised to see worn male *A. paphia* in this area. At Dorchester on 24th August we took our only male *C. hyale* seen this year but heard afterwards that a few specimens had been seen in the Swanage district. Throughout September *M. stellatarum* was in vast numbers all over Bournemouth and surrounding district; specimens were seen as late as 26th October.

It was during this month that the clover fields presented an amazing sight, swarming with *C. croceus* and var. *helice*; in a few hours we examined well over a hundred *helice* in one field alone and many fine colour forms were taken showing the whole range of variation from normal type females to var. *pallida*, *helice* including many *obsoleta* forms; several were found drying their wings, having just emerged from the pupa; fresh insects of this species were seen on 26th October. We also took some nice forms of *V. cardui*. It turned out to be a good autumn for *H. phlaeas*, which was very abundant at Swanage during October but variation was confined chiefly to *caeruleopunctata* forms. We were pleasantly surprised to see *P. icarus* so late in the season as 19th October. To sum up, our experience was that butterflies were rather scarce until about the middle of July; after that, the arrivals from abroad did much to make the summer of 1947 a most memorable one.

COLLECTING NOTES.

SURREY HELOMYZIDAE (DIPT.).—Although the abnormal cold of last winter and the dryness of the past summer has not been propitious for species of *Helomyza* and other fungi frequenters, I have been fortunate in finding two species additional to my Surrey list (*Ent. Rec.*, 1947, 15-17). On 13th April 1947 I found a female *Helomyza flavifrons*, Zett., resting on wet mud by the stream crossing Western Plain, Bookham Common. On 21st May 1947 a female *Helomyza ustulata*, Mg., was taken at the margin of a coppice fringing chalk downland at Coulsdon.—L. PARMENTER, 94 Fairlands Avenue, Thornton Heath, Surrey, 11th January 1948.

A NOTE ON BRED SPECIMENS OF PEGOMYA (DIPT. MUSCIDAE).—Mr M. Niblett kindly handed me some bred specimens of *Pegomya* for identification. They did not agree with any specimens of this genus in my collection and I gladly accepted Dr F. Van Emden's kind offer to determine them.

Three males that emerged on 5th May 1937 from leaf mines in *Rumex crispus*, L. (Common Dock), collected at Wallington, Surrey, 26th May 1936, proved to be *Pegomya versicolor*, Mg.

A male that emerged on 16th July 1938 from a leaf mine in *Lychnis dioica*, L. (Red Campion), collected at Coulsdon Common, Surrey, on 18th June 1938 is a *Pegomya albimargo*, Pand. The latter specimen has been presented to the National collection, where the species was previously unrepresented.

The first appears to be a record of a fresh host plant for the species. Hering, in *Die Blattminen Mittel und Nord-Europas*, 1935-1937, records *P. albimargo* from mines in *Melandryum* (which in Germany is regarded to include *L. dioica*) and *Stellaria* and *P. versicolor* from mines in *Heracleum*.

In case others are interested in breeding leaf-mining Diptera, or if, in breeding leaf-mining Lepidoptera, they should happen to breed Diptera, may I suggest that they at least send duplicate specimens of imago and pupa, with full data, to the British Museum (Nat. Hist.), Crom-

well Road, London S.W.7. Mr H. Oldroyd, Dr F. Van Emden and their colleagues would, I am sure, welcome additions, in view of their present task of preparing keys to the British Diptera.—L. PARMENTER, 94 Fairlands Avenue, Thornton Heath, Surrey, 10th January 1948.

FORCED REARING OF EREBIA BLANDINA (AETHIOPS).—An attempt to rear the Northern Brown from ova deposited by four captured English females in 1945 ended in failure. Although two larvae were taken to the pupal stage, the imagines failed to emerge. In this initial attempt the main difficulty was in finding a suitable food-plant. The newly-hatched larvae refused all the likely species of grasses available and a large proportion of them perished through starvation. In despair I finally offered them leaves of couch grass (*Agropyrum repens*) growing near the house, and, like most things in this industrial district, well coated with soot. The larvae readily took to this unlikely food, but all with two exceptions died at various stages through fungus attacks.

This season (1947) I had another opportunity to rear the species. From a single large fresh female 64 ova were obtained. Half of these were despatched to a southern correspondent, and the larvae from the remaining 32 ova were reared on the sooty couch grass leaves. No difficulty was encountered, for the larvae began to feed immediately on hatching and progressed slowly but steadily, reaching full size and pupating in early December. They were reared in a suitable container indoors and showed no signs of wanting to hibernate at any stage. Seven pupae were eventually obtained. These were stored in a closed tin containing a pad of slightly damped cotton wool, and the butterflies emerged on the dates following:—♂, 31st December 1947; ♂, 1st January 1948; 2 ♂♂, 2nd January 1948; ♀, 4th January 1948; ♂, 5th January 1948; ♀, 8th January 1948.—T. D. FEARNEHOUGH, 25 Ramsey Road, Sheffield.

CURRENT NOTES.

We regret to read an announcement in *The Times* of the death on 26th January 1948 of Professor T. D. A. Cockerell, at the age of 81. Sixty years ago he wrote an interesting series of articles on Variation of Insects in the *Entomologist*. About 1890 he went on a visit to Colorado and shortly afterwards he was in Jamaica. In 1894 he was Entomologist to the New Mexico Agricultural Experiment Station, and he finally settled down in Boulder, Colorado, where he was Professor of Biology until his retirement. Cockerell was a prolific writer on many subjects and specialized in the Bees of the World, on which he published numerous papers.—T.B.F.

THE December 1947 issue of the *Entomologist's Monthly Magazine* contains an interesting article by R. H. E. Hinton on some Beetles occasionally introduced into the British Isles, illustrated by a very fine coloured plate. But the price of this number, 6/6, makes one think.—T.B.F.

THE *Entomologist* for January 1948 contains a paper by Prof. J. W. Heslop Harrison on Lepidoptera in the Inner and Outer Hebrides in 1947, and a notice by Miss Cynthia Longfield on the rediscovery of *Coenagrion armatum* in England.—T.B.F.

DURING the last fifteen years Dr A. Jefferis Turner has been revising the Australian Oecophoridae in a series of papers in the *Proceedings of the Linnean Society of N.S. Wales*, and Part XIV of his Revision is now to hand. Up to this Part 2291 species and 205 genera have been dealt with: in other words, the Australian Oecophoridae alone total almost as many species as we can count on the British List for the whole of the Lepidoptera. In fact, when we come to consider the Fauna of the whole World, we begin to realize what a small sample of the total is represented by the British species.—T.B.F.

“ A REVIEW of the Phylogeny and Classification of the Lepidoptera ” (*Proc. Linn. Soc. N.S.W.*, LXXI, 303-338, 96 figs.: 30.iv.1947), by Dr A. Jefferis Turner, is too packed with facts to render itself capable of condensation here, but we may draw attention to it as being based on study of extra-European species and also as it is published in a periodical which is not read by many English Entomologists, although it is generally accessible in most scientific libraries. As Dr Turner says: “ It will deserve attention by anyone who attempts a future classification.”—T.B.F.

THE Proceedings of the Seventh International Entomological Congress, held in Berlin in August 1938, have now come to hand. Two volumes were issued before the war and Volume III-V, which we never expected to see, were sent out in December 1947. “ Kolossal ” is the only word—in fact, the five volumes scale nearly 25 lbs. wt. The amount of work involved in their preparation must have been vast and one feels that most of the papers included might well have been published by local sources. As it is, they are rather entombed in a mass of material.—T.B.F.

THE Eighth International Entomological Congress is to be held at Stockholm, 9th-14th August 1948. Information can be obtained from the Congress Office, Stockholm 50, Sweden, and it is to be hoped that as many will take part as can do so. Meanwhile, we much regret to hear of the death, about 1st February 1948, of the President-designate, Prof. Dr Yngve Sjöstedt, the well-known Swedish Entomologist.—T.B.F.

ERRATA.

Special Index to Vol. LIX.—p. 2, transpose columns 1 and 2; p. 3, *abbreviata* (not abbreviation); *derasa*: see *pyritoides*; p. 5, *pyritoides* (not *pyrinoides*), *Tukdah* (*Sikkim*); p. 6, *lineatus*, *Stenobothonus*, read *Stenobothrus*; last word read *coxa*.

Vol. LX, January 1948.—p. 7: second par., line 1, for “ have ” read “ has ”; line 3, for “ *piniaria* ” read “ *piniarius* ”: third par., line 3, for “ 1929 ” read “ 1829 ”; line 13, for “ spreads ” read “ spread.”

EXCHANGES.

Subscribers may have Lists of Duplicates and Desiderata inserted free of charge.

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Wanted—American Hesperilidae, especially from Costa Rica, West Indies, the Guyanas, Guatemala, Honduras, Nicaragua, Venezuela, Colombia and Bolivia. Write K. J. Hayward, Instituto Miguel Lillo, Calle Miguel Lillo 105, Tucuman, Republica Argentina.

Desiderata—Dipterous parasites bred from Lepidopterous larvae or pupae, or from any other animal.—H. Audcent, Selwood House, Hill Road, Clevedon, Somerset.

Wanted.—I need specimens of *Lycaena (Heodes) phlaeas* from all parts of the world, particularly Scandinavia, Russia, Siberia, Madeira, Canaries, N. Africa, Middle East counties, and E. Africa; also varieties from British Isles or elsewhere. I will purchase these, or offer in exchange good vars. of British Lepidoptera or many sorts of foreign and exotic Lepidoptera.—P. Siviter Smith, 21 Melville Hall, Holly Road, Edgbaston, Birmingham, 16.

Wanted for cash or exchange many species of ova, larvae or pupae, especially local forms and *A. grossulariata* from different localities, also Seitz Vol. 1 and Supplements to Vols. 1-4. Offers also, Tutt's *Practical Hints*, Parts 1 and 2; Buckler's larvae, Vols. 1-6, and Tutt's *British Noctua*, Vols. 2, 3, and 4.—Dr J. N. Pickard, F.R.S.E., 36 Storeys Way, Cambridge.

Wanted.—Various monthly parts of *Entomologist's Record* for 1914, 1915, 1916, 1917, 1919, and 1920. Please report any odd monthly parts (in wrappers as issued) prior to these years.—P. B. M. Allan, 4 Windhill, Bishop's Stortford, Herts.

Wanted urgently for genetical purposes, pupae of *Selenia tetralunaria*.—Dr H. B. D. Kettlewell, Homefield, Cranleigh, Surrey.

Wanted.—Various Books on Lepidoptera. Please send lists and price. Also wanted, Live Exotic and English Lepidopterous Material for cash or exchange for similar material or Set English Imagines.—J. K. Goody, "Weldon," 26 Carr Wood Road, Bramhall, Ches.

Sale or Exchange—R.E.S. *Trans. and Proceed.*; bound, 1911 to 1916, 1918 to 1919; unbound, 1921 to 1923, 1925; also 1917 and 1924 less part 5. New Series—*Trans.*, Vols. 1 and 2, Vol. 3, part 1. *Proceed.*, Vol. 1 and Vol. 2, part 3. *Trans. Suffolk Naturalist Society*, Vol. 3 and Vol. 4, part 1. **Wanted**, bound or unbound, *Entomologist*, Vols. 2 and 3, 1926 to 1930, 1940 to 1942. *Ent. Mont. Mag.*, 1922, and 1924 to 1942; also various volumes of R.E.S. *Trans.* List on application.—F. W. Smith, Boreland of Southwick, by Dumfries.

Wanted, for experimental purposes, a few pupae of *Endromis versicolora*, purchase or exchange.—R. W. Parfitt, 1 Dunsdon Avenue, Guildford, Surrey.

Wanted—Bristol board suitable for mounting Coleoptera. Also, Puton, A., 1878, "Synopsis des Hémiptères-Hétéroptères de France. Badonnel, A., 1943, *Faune de France*, No. 42, Psocoptères.—H. G. Stokes, 12 Roman Road, Salisbury, Wilts.

Wanted for Cash.—Tutt's *British Butterflies*, 1896: *Transactions and Proceedings Royal Ent. Soc. Ldn.* (must be almost if not quite complete).—Lionel Higgins, Linkwood, Woking.

For Sale.—Tutt's *British Noctuas*, 4 vols., complete: *Index Entomologicus*, by W. Wood, F.R.S., a complete illustrated catalogue of the *Lepidoptera of Great Britain*, 2 vols., half calf, pub. 1839, excellent condition.—Geo. Nicholson, Rosedale, 24 Nuns Moor Crescent, Newcastle-on-Tyne, 4.

For Disposal.—*Entomologist's Record*, Vols. 55 (1943) to 59 (1947) in parts, all in good condition. For cash, or in exchange for any of Dr Imms' Textbooks of Entomology including the latest.—Alan M. MacLaurin, Oldhall House, Kilmacollm, Renfrewshire

Wanted.—For the British Museum larval collection, larvae of Chrysomelid beetles, alive or preserved. Liberal exchange if required.—Dr S. Maulik, British Museum (Natural History), Cromwell Road, London, S.W.7.

Wanted for Cash—Ova, Larvae and Pupae of *Gastropacha quercifolia*.—R. M. Rickard, Coningsby, Lincoln.

Wanted—Nearly full-fed Larvae or perfect specimens of *Thecla betulae*, for cash or exchange other British species.—Chas. B. Antram, Clay Copse, Sway Lymington, Hants.

MEETINGS OF SOCIETIES.

Royal Entomological Society of London, 41 Queen's Gate, S.W.7: April 7th, May 5th, at 5.40 p.m. *South London Entomological and Natural History Society*, c/o Royal Society, Burlington House, Piccadilly, W.1; 2nd and 4th Wednesdays; 6.0 for 6.30. *London Natural History Society*: Tuesdays, 6.30 p.m., at London School of Hygiene or Art-Workers' Guild Hall. Syllabus of Meetings from General Secretary, H. A. Toombs, Brit. Mus. (Nat. Hist.), Cromwell Road, S.W.7. *Birmingham Natural History and Philosophical Society—Entomological Section*: Last Fridays in month, at 7 p.m., at the Birmingham Museum and Art Gallery. Particulars from the Hon. Secretary, G. B. Manly, 72 Tenbury Road, King's Heath, Birmingham, 14.

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CONTENTS.

BUTTERFLY COLLECTING IN WOOD WALTON, HUNTS., AREA, THE CHILTERN HILLS, AND ROYSTON, HERTS, DURING 1947, <i>H. A. Leeds</i> ,	41
NOTES ON THE LEPIDOPTERA OCCURRING IN THE READING DISTRICT DURING 1947, <i>L. H. Williams</i> ,	44
INBREEDING IN HEBRIDEAN LEPIDOPTEROUS POPULATIONS, <i>J. W. Heslop Harrison</i> , D.Sc., F.R.S.,	46
COLLECTING NOTES: Four Notes on Diptera, <i>E. C. M. d'Assis-Fonseca</i> ; Scarcity of some Aegeriidae in Hampshire; Does <i>Aegeria formicaeformis</i> cause galls on <i>Salix viminalis</i> L.?	50
CURRENT NOTES	54
AUCTION SALE OF VARIETIES OF BRITISH BUTTERFLIES, III, <i>L. Hugh Newman</i> , F.R.E.S.,	54
OBITUARY	55

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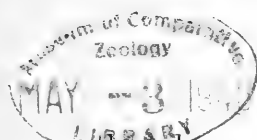
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BUTTERFLY COLLECTING IN WOOD WALTON, HUNTS., AREA, THE CHILTERN HILLS, AND ROYSTON, HERTS., DURING 1947.

By H. A. LEEDS.

(Concluded from p. 35.)



Apparently a large quantity of *P. napi* immigrants arrived in this district between 5 p.m. and 8 a.m., G.M.T., 11th and 12th July. On the former date I was in Monk's Wood for about two hours, leaving at 5 p.m.; my walk was extensive in sunshine which had succeeded heavy clouds of that and the previous day; only a few "White" butterflies were in the wood then, but when reaching it just before 8 a.m. in the morning of 12th I found four groups of 8, 9, 9 and 10 *P. napi* settled on damp patches; entering the main riding it was seen that similar groups, only a few feet or yards apart—like little heaps of snow placed irregularly—occurred as far as sight permitted. Thinking that an approximate estimate might be interesting I commenced counting the groups which contained 7 to 11, none had more, and in the mile straight riding such groups numbered 223, this multiplied by 9 as an average = 2007, no lot had 6, but occasionally 5 or less occurred, say plus 193 = 2200. The sun was gleamy and they rarely flew as I stooped to look for vars., of which I found none. Similar groups were seen to be settled on damp patches of the cross-ridings and they continued on the main. Probably 7 to 8000 occupied Monk's Wood; some were worn or ragged but the majority in very good condition. Later the sun shone warmly and they commenced to fly. Returning homewards they were seen to be abundant along the roadside and in gardens. Only rarely had *rapae* joined them in the early morning. On 13th July the sun shone hotly and nearly all *napi* had left Monk's Wood; a few do regularly breed therein and are generally stronger veined and marked and consequently a more fragile appearance when settled or sunning was apparent in the presumed arrivals.

The *atalanta* female of 24th June was found in the hedge of an elm plantation, and twice when walking in the adjoining field I noticed that a worn male was fluttering about the spot as if interested. I flicked it away with the net, but it immediately returned and resumed close fluttering to the female sitting low down on an elm twig with a ray of sunshine on it. Barbed wire was outside the hedge and I only just managed to reach and bottle it by lying on the field: the wings had not completely dried and caused difficulty when setting, but I have retained it owing to the early date of emergence. About a yard from the female some nettles were growing and possibly the larva fed on them. Actually at that time I was looking for *w-album* and saw a few there as they fed at flowers of Cow-parsnip (Hog-weed), *Heracleum sphondylium*; no bramble flowers were out to provide their nectar.

The hot season especially favoured *phlaeas*, and consequential to the previous wet conditions of the fields some remained partly or wholly derelict and docks were more plentiful to provide larval food. In the second brood only two up to five were seen on any day, but some idea of their increase in the third brood can be gathered from the following:—Two were flying on 3rd September and they gradually increased

until 24th, when in the afternoon 40 were looked at as they mainly fed at the flowers of Ragwort, *Senecio jacobaea*, alongside $1\frac{1}{2}$ miles of roadway towards Sawtry. The next morning 121 were feeding along the same stretch, and in the afternoon 249 along and on the west side of the railway embankment for a mile towards the fen; this makes 370 settled, and with many others randomly flying, 600 gross would be a fair estimate for the $2\frac{1}{2}$ miles on 25th September; they were only counted on the outward journeys. They diminished afterwards and some survivors were much worn when later on in October a partial fourth brood seemed to commence on the uplands; lack of flowers made it difficult to locate them but up to 40 fresh were examined on sunny days. The last three fresh ones noticed, settled on a hedge near home on 5th November; they were females sunning. A grass field in the fen contained many late flowering Ragworts which the third brood frequented, but no fourth brood appeared there.

Although gravelly, sandy, or possibly chalky soils produce a larger percentage of aberrations than ours of clay and fenland, it may be useful as a comparison to record what was taken here, and the numbers in parenthesis accord with those for the description in my "Addenda" for *phlaeas*, pages 141-144 of the "Monograph of *P. coridon*."

Uppersides: males, (31) *sinis-partimflavescens*, (101) *antitransiens*; females, (3b) *lacticolor* of extremely pale-straw and perfect, (27) *caudata*, (28) *subradiata*, (39c) *auronitens* including nos. 28 and 39e, (39e) *aurocuneata*, (95) *discoidea*, (102) *antijuncta*, (103) *antidiscoeloga*, (127) *minor*; in both sexes:—(4) *antipallidula*, (22c) *transformis*, 1, 2 or 3 wings, (29) *partimauroradiata*, (39d) *caerucuneata*, (54) *antiparvipuncta*, (126) *major*.

Undersides: males, (4) *antipallidula*, (22b) *antidex-partimtransformis*; females, (55) *anticrassipuncta*, (60) *addenda*, (102) *antijuncta*, (130) *Teratological* with smaller right wings; in both sexes, (64) *quintaerratica*, (101) *antitransiens*, the latter and no. 102 *antijuncta* were scarce and not of good quality.

Apart from above, variation worthy of note was rarely found at Wood Walton, viz., *A. hyperantus*, ab. *caeca*, female, wholly white spotted, but set underside. *C. argiolus*, male underside, *anticaeca*. *S. pruni*, female upperside with five long and broad interneural streaks of fulvous on forewings, the second streak connected with a fulvous discoidal spot on both wings.

Royston, Herts., was visited for about five hours on two occasions when Dr J. L. Newton and Mr G. S. Hyde kindly conveyed me in their cars on 27th July and 5th August respectively. *P. coridon* was abundant and I found one *infra-* and one *semisyngrapha*, and a *postradiosa* in the female uppersides. Dr Newton took a female underside *postdextradiata* having the three uppermost streaks extending from the border, the top and third extension joined to submedian spots. I think Mr Hyde took nothing important on 5th August, but two days previously he caught a male underside *anticaeca*, and female undersides, *postcaeca*; and a fine *alba-discreta-curvedura*; all three were shown to me before setting. The barley grown adjacent to the hills was being cut by

a combine-harvester, and another machine was compressing the straw and wiring it into oblong bales. A local inhabitant informed me that "this was the final harvest on The Heath as all the arable ground was to be grass sown so that the training of race horses could be resumed."

The Chiltern Hills in Bucks. and Oxon were toured from 16th to 30th August, during very hot and sunny weather. Nearly all *coridon* were worn, but some of them continued flying throughout, and as they settled it was apparent that variation was poor, only a fresh strongly marked *arcuata* female underside was taken and no *syngrapha* occurred. Recollecting that I last saw a female *syngrapha* and two male *metallica* at Wainhill just before the 1939 war commenced and that I had not been there since then and wondering if *metallica* males again presaged extinction, I made a thorough examination of the Wainhill area and found no *coridon* there, although half-a-mile distant many were flying at Chinnor, whilst elsewhere they appeared in all the other usual places.

Scabious flowers were plentiful and attractive generally, *icarus* very fresh and in fair numbers; visited them, but provided only four aberrations, viz., *elongata*; and three *Confluentiae* containing *semiarcuata-costajuncta*; *arcuata-basijuncta*; *arcuata-semilimbojuncta*, all female undersides and taken 20th August near Pulpit Hill. A female upperside of *pamphilus* with 4 spots on hindwings = *postquadriexcessa*, and a male upperside of *croceus* with yellow forewings completes a poor list of the Chiltern's aberrations. Ordinary *agestis* and *urticae* were plentiful, *croceus* widespread, and a few *bellargus* emerged.

At Wood Walton a field of Red clover on a hillside near home was bounded on two sides by a main road from which I often well overlooked the clover when flowering for a second crop, but, surprisingly, apart from odd "Whites" only two *atalanta* and one *io* were seen *all told* on the field, although they and *urticae* frequented the roadsides, also some *cardui* and *croceus*; even only two or three Humble-bees, which fertilize clover, could be found, although several times for assurance as to absence I entered the field. The clover was cut for hay, otherwise if left later for seed there could be very little germination. The flowers died very quickly in the drought and heat and I think nectar was deficient as no attractive perfume could be detected except from a flower on which the one *io* had commenced to feed. The crop was not affected by mildew and was not sprayed. Humble-bees appeared commonly in the garden.

A farm foreman told me that "when flowering he had seen lots of different butterflies in a fen field of lucerne"; he named some of the species and mentioned "bright yellow ones," doubtless *croceus*. He indicated the field, which I could see was green, but it was too far from home for walking to it. When later I was working the west side of the railway embankment during October *croceus*, nearly all males, would come from the direction of the lucerne field and often they would settle, or feed at Ragwort, and the continuation of their flight was always *southwards*. Possibly if I could have watched the lucerne field my percentage of 2 or 3 for the females might have been considerably more as probably they were contented to remain where their ova could be deposited. These October *croceus* were generally smaller than those of the August brood.

NOTES ON THE LEPIDOPTERA OCCURRING IN THE READING DISTRICT DURING 1947.

By L. H. WILLIAMS.

Although a specimen of *P. pedaria* was seen at rest on a tree trunk on 4th January and a male *T. rupicaprararia* on the 8th, no other moths were seen that month owing to the very severe weather. However, by 23rd March the weather had broken and that evening was warm and showery. A 300 c.p. lamp taken into an oak wood attracted over 30 male *A. hispidaria* in less than half an hour and *E. marginaria*, *E. leucophaearia*, *A. aescularia* and *P. pedaria* were also seen in numbers.

The Sallows came into flower about a fortnight later than in 1946 but, as usual, moths abounded on them in the evenings. On 10th April *O. incerta*, *O. gothica*, *O. munda*, *O. cruda*, *O. stabilis* and *N. carpinata* were common and by the 14th April *C. rubricosa* and *O. miniosa* were fully out. *P. flammea*, *O. opima* and *O. gracilis* are always the last of the "sallowing" moths to appear and they were not in the height of their numbers until the 20th April.

From this date onwards the difference between the dates of emergence of insects in 1946 and 1947 decreased so that by mid-May moths were appearing at their normal times.

During the past season I have made most of my captures at light, particularly at the big mercury-vapour street lamps. Although not noticeably brighter than the sodium-vapour lights they attract many more insects, and not only Lepidoptera—cockchafers, mosquitos, lacewings, caddis-flies and representatives of other Orders come flying round. This difference is, no doubt, due to the amount of ultra-violet light given out by these lamps.

Sugaring was a failure from early August until Autumn leaf-fall, although quite profitable during June and July. It was during July that I first noticed how many more insects were about this year compared with previous years. Oak feeding caterpillars had been so abundant in the Spring that some trees were completely defoliated. Walking beneath the trees, after dark when the culprits were busy feeding, the noise of their frass dropping on the leaves sounded remarkably like raindrops in a heavy Spring shower. Among the offenders were *E. defoliaria*, *T. viridana* and several of the commoner Noctuids. This caterpillar plague did not last long and within a matter of a few weeks fresh leaves appeared on the trees and the woods assumed their normal Summer appearance once more. However, on the evening of 22nd July I sugared in a large oak wood, 12 miles S. of Reading and I was very surprised to see numbers of *C. promissa* attracted to the concoction. On one occasion I counted no fewer than nine of these big moths at the same time on a small sugar patch. In a normal season, if half a dozen specimens of this moth are seen in one evening I feel well rewarded for my efforts. Local collectors who have worked the wood for many years say that they have never before seen this insect in such numbers. In passing, I might say that I have never succeeded in inducing this species to lay eggs in captivity, although I have provided the female moths with leaves, twigs and even bark.

In the same wood *Apatura iris* has been more plentiful than usual this year. On 24th July I netted a fresh male butterfly flying around a recently felled Pine trunk. A week later I attracted a female to bait but, unfortunately, failed to box her. On 16th August I netted a female at rest on the foliage of a birch tree but, although she was fed twice daily, she died on the 19th without laying a single egg. She was sadly worn when captured so I think her death was entirely due to natural causes. Besides the above, I saw 15 of these butterflies flying around oak trees, usually about 15 feet from the ground. I was interested to observe *P. megera*, *P. aegeria*, *N. io*, *V. atalanta* and *L. camilla* also indulging in the unpleasant *iris* bait. I wondered at the time whether this was a regular habit or if it was due to the water shortage.

By the end of July, *C. croceus* was well on the wing and from then until the end of October ranked among our commonest butterflies. Among the typical form there was quite a good sprinkling of var. *helice* and ab. *pallida*. On 3rd September I took a single male specimen of *C. hyale* in a lucerne field, the only example of this butterfly seen here this year. Unfortunately the drought caused the clover to die during August and the lack of suitable fields of this kind in September and October was probably the only reason why others were not taken. It would appear that lucerne is a more drought-resistant plant than *Trifolium*. Sheep were turned out on the last lucerne field on 12th September and they soon reduced its luxuriant plants to mere stubble.

The three immigrant butterflies—*P. rapae*, *V. atalanta* and *V. cardui*—have also been common this year together with the moth, *M. stelarum*. Strangely enough *P. brassicae* has been comparatively scarce and our cabbages have almost entirely been eaten by *P. rapae* caterpillars.

As usual, a few specimens of *H. dipsacea*, *H. peltigera* and *H. convulvi* were seen. Altogether three *N. antiopa* were seen in the district this year but only one of these was captured.

R. sacraria has been reported from many districts of England this year and altogether nineteen were taken in the Reading area. The first of these was a male which I found at rest on a lucerne leaf on 3rd September. I saw my last on a street lamp on the evening of 7th November, which was the fourth of a succession of frosty nights.

L. exigua was quite common at light during August and a partial brood appeared in September.

The long fine spell of warm weather allowed some insects, which normally hibernate as caterpillars or pupae, to feed up and produce an extra brood in the autumn. Among the butterflies *P. megera* and *H. phlaeas* produced an extra brood in October and I took a very small female specimen of *L. camilla* in the lucerne field on the flowers in September. *S. lubricipeda*, *E. similis*, *O. sambucaria* and *H. syringaria* were moths which appeared as a partial second brood in the autumn.

Finally, after a very exceptional year there are still freshly emerged *O. brumata* and *E. defoliaria* coming to light up to the date of writing (31st December), so it appears that some late Autumn and a few early Spring moths will be flying together in early January 1948.

INBREEDING IN HEBRIDEAN LEPIDOPTEROUS POPULATIONS.

By J. W. HESLOP HARRISON, D.Sc., F.R.S.

From the earliest times when man first began to breed animals for his use, he has speculated about the possible effects of close inbreeding. Obviously, if we judge from the laws governing the closeness of inbreeding permissible in man, the bias of our ancestors must have been against the process. This opinion, however, depended upon observation alone, and to Darwin was left the introduction of experimental attacks on the problem. On the whole, the results of his work lent support to older views.

Later, other workers, dealing in general with small mammals, produced evidence of an equivocal type so that even to-day great diversity of opinion about the matter exists among breeders. Some maintain that inbreeding fixes types and is not necessarily harmful, whilst others protest that it ends in weakened constitutions and diminished fertility. On the other hand, geneticists, interpreting all the facts in the light of accepted principles, insist that the end result depends entirely upon the genetical build up of the original material.

In the Hebrides, where quite a number of lepidopterous insects exist as small isolated colonies occupying tiny islets, cliff ledges, or sea and mountain gorges, experiments initiated by Nature herself have been in progress for very much longer periods than have been available to modern man. In fact, some of them have continued since interstadial stages of the Upper Pleistocene glaciation, others since the close of the Great Ice Age, still another series since Boreal times and others for a few centuries only.

In this paper, it is proposed to bring under review the effects of inbreeding in a few selected cases amongst Hebridean Lepidoptera.

Arygnnis aglaia, L.—This fine insect occurs in most Hebridean islands; yet only one colony, detected on Flodday, a tiny islet lying south-west of the Isle of Vatersay, can be regarded as isolated and, therefore, subjected to intense inbreeding. There the species exists in a small, palish form quite distinct from the race *scotica* described by Watkins.

Although the dwarfness of the Flodday race may be a direct result of inbreeding, the orthodox position would be to regard it as the outcome of natural selection working on a population varying in the wing expanse of its members, and exposed to grave risks of being blown out to sea. Still, since plants like the devil's-bit scabious (*Scabiosa succisa*) exist in germinally fixed dwarf strains on the island, the latter view must be approached with great caution.

In spite of its diminutive size, the race manifests no loss of constitutional vigour; nor does the population density depart significantly from that observable in other Hebridean colonies of the insect. Thus, in these respects, strong inbreeding has not proved deleterious. Nevertheless, that process may be held responsible for the degree of its pigmentation displayed by the insect. However, it seems more than likely that the Flodday population was severed from the main Hebridean contingents before the *scotica* genes for size and colour had become predominant in the area. In that event, the stage would be set for in-

breeding to have full scope for lowering the available variability. Further, the Sewall Wright drift phenomena, with mere chance deciding which gene combinations would prevail, would determine the final facies of the population. Thus, without exerting any evil influence on the race, inbreeding would play its part in its evolution and stabilization.

Polyommatus icarus, L.—Throughout the Hebrides, this insect is not only more widely dispersed than *A. aglaia*, but, in addition, possesses a greater number of isolated colonies. Some of these, on islets like Flodday, Scotasay, the Monach Isles and the Hyskeir reef, owe their isolation to the sea; others, represented by those on the grassy cliffs in the north-west of the Isle of Ronay (North Uist) and in the Allt Volagir ravine (S. Uist), are separated from the main bodies of the species ecologically. In all these cases the race represented is the Pleistocene *clara*, Tutt, with this modification, that, precisely as in Flodday *A. aglaia*, the wing expanse is less than the normal. Obviously, in the case of populations marooned on islets, natural selection may be invoked as explanatory of this circumstance, but it cannot be deemed wholly satisfactory in the secluded and sheltered population of the Allt Volagir gorge.

In none of these instances has obligatory inbreeding interfered with the general vigour of the colony or with the brilliancy of the insects' colours. Still, it may be held accountable for the small size of the individual insects.

Tethea or, Fab.—Once again we are concerned with an insect widely distributed in the Hebrides, and occurring wherever aspens grow. However, in the Western Isles, the aspen is essentially a cliff plant, and in such situations single trees may often be found spreadeagled against the rocks in localities far away from other representatives of the species. Invariably, such trees, or small groups of trees, carry populations of *T. or*. Examples of such restricted habitats may be encountered on the Isles of Benbecula, Ronay, S. Uist and elsewhere in the Outer Isles, as well as on the Isles of Coll and Rhum in the Inner Isles. Notwithstanding the heavy inbreeding which must occur, no ill effects are observable in the populations. The colonies seem to flourish with their numbers and the average sizes and pigmentation of the insects concerned quite unimpaired. In fact, in some of these single tree stations, numbers often increase to such an extent that the trees are quite defoliated, without the general state of the colony being affected by the combination of starvation and inbreeding.

Obviously, these recurrent periods of dearth may aid in evolutionary movement by the elimination of larvae endowed with gene combinations leading to constitutional weakness.

Achlya flavicornis, L.—This species has been reported from the Isles of Raasay, South Rona, Soay and Rhum, and only on the last-named island have any isolated colonies been observed. One of these depends upon a single birch, growing in a gorge lying between Kilmory and Samhnán Insir, miles away from other birch trees. The second is attached to a small group of birches in the dry ravine near the Allt na h'Uamha slightly to the north-east of Hallival. Inbreeding, therefore, in the first must be intense, but in the second, less so; nevertheless,

it seems to have no adverse effects whatever on the insects in either case.

Drepana falcataria, L.—The position of this insect is much the same as that of the previous species. It occurs on Raasay, South Rona, Soay and Rhum, but, once again, Rhum provides the only known isolated colony. This was discovered on two birches perched on a secluded cliff on the north side of Mullach Mor. Except that the insects are much paler than ordinary English specimens, inbreeding has had no apparent influence on them. In the matter of colour they agree with Highland Scottish examples.

Xylocampa areola, Esp.—In this species we are concerned with an insect recognized up to the present from the Isles of Canna, Coll and Rhum. In considering its habitats, only those on Coll and Rhum can be dealt with; those on Canna are unknown to me. On Coll it is met with on honeysuckle occurring as single bushes on rock ledges or in cliff cracks. In spite of this, in 1947 we never beat a single plant without dislodging a supply of larvae, even when, as on the cliffs to the north-west of Loch a'Mhill Aird, it grew very far away from other *Lonicera* plants. On Rhum, honeysuckles are more prone to occupy tiny gorges acting as relict stations for plants; still, the insect is just as widely dispersed as on Coll. On both islands, if one bases a judgment on the larvae and pupae, the inbreeding necessitated by the remoteness of the colonies from one another has produced no ill effects on the populations.

Cidaria fulvata, Forst.—Except for a colony in Lingadale, Isle of Harris, this insect has only occurred to us in the Inner Isles where it may be regarded as generally distributed and occasionally plentiful. As the foodplant of the insect is rose, its distribution is limited by that fact. Now roses, except for the burnet rose (*Rosa spinosissima*), are, for the most part, found in the Hebrides as single, isolated plants sprawling amongst rocks.

Between Gallanach and Loch an Duin on Coll exist two or three such examples of *Rosa dumalis*, and each supports a colony of *C. fulvata*. In late June, if one beats these bushes, larvae and pupae are obtained in great numbers. The resultant imagines must be the outcome of countless generations of very close inbreeding; yet their size, pattern and colour differ in no wise from those characteristic of mainland stocks. In other words, once again persistent inbreeding has led to no evil results. The same holds true of the *C. fulvata* population in the hazel copse in Glen Kinloch on Rhum where the foodplant, *R. spinosissima*, grows in somewhat greater quantity.

Thera cognata, Thnbg.; *T. juniperata*, L.; *Eupithecia sobrinata*, Hb.—These three species are all juniper feeders; nevertheless, their Hebridean distributions are not co-extensive with the range of their foodplant, *Juniperus sibirica*. Often enough, the first two occupy the same stations, but the Juniper Pug has only been taken from an isolated juniper growing high up a cliff just to the east of Samhnan Insir, Isle of Rhum. Repeated searches for it elsewhere on Rhum, and in the Hebrides generally, have invariably ended in failure. Again, therefore, the species must have undergone a long experience of inbreeding, and again without any apparent reduction in vigour.

Like Hebridean roses, the dwarf juniper is essentially a rock and cliff crevice plant, and thus the circumstances recounted in connection with *C. fulvata* repeat themselves here. Very often, indeed, the two Juniper Carpets find their domiciles on isolated junipers far away from other examples of the larval foodplant. If these shrubs are beaten in late June and early July, enormous numbers of larvae and pupae of *T. coniferata* fall into the tray; these yield strong healthy imagines which agree in size with Durham examples although they differ in coloration.

In the Outer Isles the specimens appertain to the race *griseata*, but, on Coll, some colonies yield the same form, and other insects much more typical in appearance. More extensive colonies may give a range of transition forms. Clearly, on Coll, as, for example, in the Loch Claid area, inbreeding has produced an effect, not expressed in lowered vitality or diminished size, but in the stabilization of phenotypes, and, probably of the genotypes of smaller isolated colonies, by the same process as pictured in the case of Flodday *A. aglaia*.

In August, the bushes often provide a supply of larvae of *T. juniperata*. Thus, on the Allt Volagir slopes on the Ben na Hoe side, Isle of S. Uist, may be seen a huge prostrate juniper which harbours a very strong colony of that species. Larvae beaten then give rise to representatives of the race *scotica*, indistinguishable in size and colour from those secured from a mainland wood in the Highlands, where close inbreeding seems almost impossible. Here we have strong evidence that inbreeding has not injured the race, and that its dwarfness cannot be legitimately assigned to the effects of consanguinity.

The facts would seem to indicate that the dwarf form *scotica* originated in the Hebrides during the Upper Pleistocene glaciation, and spread to the mainland, in all probability, according to the latest evidence, in Boreal times.

Eupithecia pulchellata, Stph.—As is well known, this Pug feeds on the foxglove, a plant sparingly distributed in the Inner and Outer Hebrides. Often enough, in the Outer Isles, it occurs in small ravines as on the Lees in North Uist, around Loch Eynort on South Uist and on the Isle of Ronay, whilst on Rhum it seems to prefer cliffs or the broken ground at their bases. In any case, great or small, nearly every colony supports the Foxglove Pug in the form of its Hebridean race *hebudium*. Some of these smaller colonies, as in the centre of Ronay, are so hemmed in by hills and cliffs that close inbreeding becomes unavoidable. Repeated observations once more assure us that such inbreeding has seemingly been without effect on the race as we see it to-day.

Nyssia zonaria, Dup.—This insect may be found on dune and machair everywhere in the Outer Hebrides from Lewis to Mingulay and also in the Coll-Tiree and Rhum-Eigg-Canna island groups. In dealing with larger colonies, little apparent weakness exists, for the insects, representing race *atlantica*, are uniform in size and sturdy in constitution. However, very often indeed in small isolated stations in dune hollows, inbreeding becomes inevitable, and this *may* be registered in the malformed specimens which so often prevail in such habitats in the wild. On the other hand, these cripples may represent the results of the starvation periodically occurring in small colonies of the insect restricted to tiny patches of *Lotus corniculatus* in the dunes.

Orneodes hexadactyla, L.—Despite close search, this plume has never been seen in the Hebrides except in one small gorge under a waterfall in Glen Shellesder, Rhum, where two honeysuckles grow. In this case, likewise, there are no obvious differences between Rhum examples of the moth and others taken in Durham and North Yorks. Here, again, the inference is that inbreeding has not affected the species adversely.

Simaethis fabriciana, L.—This moth is of extreme interest in the present discussion for its distribution follows that of the common nettle, which, beginning in neolithic times, depends on the movements of man. In the Hebrides the plant always grows in areas heavily charged with nitrogenous matter, and, necessarily, such stations lie near cave dwellings deserted long ago, near the sites of crofts abandoned early in the last century, or near recent habitations. On Rhum, several nettle colonies exist around caves formerly occupied by neolithic man and in one case by Norse invaders; others are of more recent origin. Similarly, in the Outer Isles, very old nettle beds, of varying ages, are encountered on the Isles of Pabbay, Sandray, Muldoanich and Ronay.

It seems very remarkable, indeed, that many of the newer colonies of nettles are free from the attacks of *S. fabriciana*, whilst, without exception, the very restricted colonies established by prehistoric man or mediaeval crofters are often defoliated by the larvae of the species. Thus Nature herself has carried out for us experiments in inbreeding often lasting thousands of years. Moreover, when one attaches due weight to the great distances between one nettle patch and the next, the inbreeding must have been very severe. Yet, in every respect, the insects bred from such colonies are replicas of those flitting about in English nettle patches in June.

Hence *S. fabriciana* repeats the evidence given by the other species that inbreeding in nature, rarely, if ever, is productive of injury to the species concerned.

In conclusion, it seems well to point out in discussing the present and preceding species that each consecutive generation in the colonies concerned must undergo considerable losses in order to maintain their numbers at the optimum level. If such eliminations are selective then they may provide a mechanism for preserving populations of a sound, virile type.

COLLECTING NOTES.

FOUR NOTES ON DIPTERA.—*Physiphora (Chrysomyza) demandata*, F. (Dipt., Ulididae), on manure-heap.—On 6th October 1947 *P. demandata*, F., was seen in considerable numbers on the sun-encrusted surface of a large manure-heap at Brentry, near Bristol (Glos.). Some difficulty was experienced in capturing specimens as, instead of flying up into the net when this was placed over them, they preferred to crawl into one of the deep cracks which covered the hardened crust of the heap. Mr J. E. Collin, who kindly supplied me with some information about this species, states that it has been bred from horse-manure and other fermenting vegetable matter, and also that, although by no means a rare British species, it is nevertheless difficult to find.

Tetanura pallidiventris, Fall. (Dipt., Sciomyzidae), near Bristol.—A single male and a number of females of this apparently uncommon species were captured at Coombe Dingle, near Bristol (Glos.) on 19th June 1947. All the specimens were found in a damp, shady, nettle-filled hollow and were settled on the leaves of Hart's-tongue Fern (*Scolopendrium vulgare*, Sm.), but I do not know whether this plant is associated in any particular way with the species. My thanks are due to Mr H. Audcent for its determination.

Episyrphus auricollis, Mg., var. *nigritibia*, Rond. (Dipt., Syrphidae), near Bristol.—This dark variety of the common Syrphid *E. auricollis*, Mg., was first encountered by me on a sunny day in early March 1946 flying about twelve feet up on the edge of a plantation of young larches in Failand, Somerset. A careful look-out was kept in the same locality early in 1947, but the prolonged winter of that year was evidently unfavourable, and it was not until 1st February this year (1948), a fine sunny day, that the next specimen, a male, was captured at Filton (Glos.) flying low in rough grass-land. A further four specimens, all females, were taken on 15th February this year (another warm sunny day) flying together with females of *E. balteatus*, Deg., around young isolated larch trees at Coombe Dingle, near Bristol (Glos.). It would appear that this species is one of our earliest Syrphids and its appearance seems to depend on warm sunny spells in the late winter months, which perhaps accounts for its apparent scarcity.

*Clythia** species (Dipt., Clythiidae) swarming round Honey Fungus (*Armillaria mellea*).—Females of *Clythia rufa*, Mg., *C. modesta*, Zett., and *C. consobrina*, Zett., were observed flying in considerable numbers near, and alighting on, a large clump of the common Honey Fungus (*Armillaria mellea*) in Blaize Woods, near Bristol (Glos.), on 18th October 1947. The first two species were present in such great numbers that several dozens could be captured by a few sweeps of the net, the third species, *consobrina*, Zett., being, however, only sparsely represented. A brief search in the neighbourhood of the fungus resulted in the discovery of males of all three species sunning themselves on the lower leaves of a Sycamore tree.

It may be of interest here to mention other species of Diptera which, by their presence in sufficient numbers, would appear to be associated in some way with Honey Fungus:—*Neuroctena anilis*, Fall. (both sexes appeared to be feeding on the fungus); *Allophyla atricornis*, Mg. (mostly observed *in cop.*); *Phaonia variegata*, Mg., and *P. scutellaris*, Fall., both sexes very numerous; *Alloeostylus diaphanus*, Wied., females only; *Piezura pardalina*, Rond., females only; *Mydaea tincta*, Zett., females only.—E. C. M. D'ASSIS-FONSECA, Westerleigh, Cote Drive, Westbury-on-Trym, Bristol, 19th February 1948.

SCARCITY OF SOME AGERIIDAE IN HAMPSHIRE.—Though it is well known and generally recognised that some species of clearwings vary greatly in numbers from year to year, the factors causing this extreme variation are still only guessed at. Certain it is that the cycle has

*More usually known as *Platypeza* (and Family Platypezidae), and indeed more correctly so named if one follows the instructions of the International Commission on Zoological Nomenclature as incorporated in *Opinions*, 93, 97, 107, and 116.—J. E. C.

this winter reached its nadir for certain species at any rate. For example, *Synanthedon flaviventris*, Stgr., is so scarce in the Southampton district that I have not seen a typical mine this winter and not more than a dozen mines tenanted by living healthy larvae. Nor have I seen any trace of the ravages of birds, which are usually very abundant by the end of February. Yet the foodplant is as abundant as ever, and the sallow bushes are of a suitable size and in favourable spots, where in former years I have seen mines in abundance. It is strange that most of the mines found—some few good but many aborted—have occurred in bushes along the edges of the New Forest bogs or in the bed of the derelict Eastleigh canal, where the roots are in very wet situations.

S. culiciformis, L., has yet to be found this year. But in all our woods and copses the birches have been cut regularly in recent years, providing abundant situations for the overwintering larvae. In the early part of 1947 I found a few larvae in the small stems of cut birches on Southampton Common, about two hundred yards from my house, but this year (1948) I have not yet seen one single larval boring in the many hundreds of suitable stumps examined. The demand for firewood in the last few years has caused extensive felling in our local woods, so that conditions would seem to be more favourable than usual, yet the species is more scarce than I have ever known it.

Similarly the demand for timber has brought about widespread felling of oaks, leaving innumerable stumps in woods where in former years *S. vespiiformis*, L., abounded. But I have not yet succeeded in finding a single larva this winter, nor did I find it in 1947.

The alder swamps in the local woods appear to me to show little change, but larvae of *S. spheciformis*, Schiff., were very scarce last year and are equally scarce this year. The mines of *S. andreniformis*, Lasp., in *Viburnum* on the chalk have been found freely in the past, but now I can find only an odd larva with much searching. *S. formicaeformis*, Esp., occurs in the usual small numbers in *Salix viminalis*, L., along the Itchen, but here the trees are in process of extinction by people who saw off their branches for firewood, and here also the bushes are in very wet situations and are often deep in water when flooding occurs. Even *S. tipuliformis*, Cl., once recorded as common in every garden in Southampton where currant bushes are grown, seems to have reached a very low ebb.

As to the causes of this scarcity, since we can rule out birds and overcollecting, and have no evidence of unusually high parasitism, they must be sought in the weather. The very wet season of 1946 and the frost and snow of the following winter may be the principal causes of scarcity, not only in the case of these common *Aegeriidae*, but may also account for the general scarcity of insects observed in South Hampshire in 1947.

DOES AEGERIA FORMICAEFORMIS CAUSE GALLS ON SALIX VIMINALIS, L.? —In a most interesting work by A. Meess: "Die cecidogenen und cecidocolen Lepidopteren, gallenerzeugende und gallenbewohnende Schmetterlinge und ihre Cecidien," *Zoologica*, 24 Band, Heft 61, Lieferung III, 1923, an account is given of the alleged gallmaking habits of this

species. The text is short and a translation is given here of the relevant part of it, op. cit., page 540:

"The larva overwinters once until May on *Salix* species in the stem and in goitrous outgrowths of young shoots, and also in stumps and in the wood of crippled stems."

On page 565 there is a description of the gall on *Salix viminalis*, here given in translation: "In shoots; large goitrous one-sided (einseitig) outgrowths, larval mine in pith and in the galls. Pupa in the gall." A footnote adds: "Spuler doubts whether the galls were caused by the larvae since the latter were found also without any swelling." On Plate IX two aspects of this goitrous gall are shown in colour, together with a longitudinal section of gall and stem. In the *Annales Soc. Ent. France*, 1922, pp. 73 et seq., there is an excellent article by de Joannis: "A critical revision of the lepidopterous gall-makers of Europe and the Mediterranean." Speaking of *Sesia formicaeformis* he comes to the conclusion that the goitrous galls that are so common on *Salix viminalis* are not caused by *S. formicaeformis*, which, he says, is not a gallmaker but only an occasional galleater.

The writer has published an article (*Ent. Rec.*, XXXIX, pp. 67-70) in which it is stated that *S. formicaeformis* makes galls on *Salix caprea*, L., but until now no extensive search had been made on *S. viminalis* and only the conclusions of earlier writers could be quoted. It should be carefully noted that these two galls on the two different species of *Salix* are very different and quite impossible of confusion. Reference to the articles quoted will make that plain. In February 1948 an opportunity of observing the larval habits on *S. viminalis* occurred, in the process of supplying a friend who requires a number of the perfect insects. *S. viminalis* occurs in quantity along the tidal reaches of the Itchen near Southampton and further up the river. The galls are very numerous and very conspicuous. They occur on shoots and stems of all ages and may be found of varying sizes and on all parts of the bush. At this date the larvae were mostly full-fed and some had made their pupal chambers. One such larva was found by detaching a dead gall with the fingers, ready for pupation in the gall itself. Other full-fed larvae were still boring in the stems about an inch and a half either above or below a gall. In fact, two such larvae were cut in two when the stem and gall were cut off. Many galls were found of all ages with no trace of any feeding in stem or gall. No larvae were found, though they possibly were present, in smooth stems where no gall occurred. Larval borings were numerous in very old thick stems, broken and half dead, which have yielded imagines in former years. Many larger galls instead of being one-sided (einseitig) had grown completely round the stems.

We, therefore, conclude in general agreement with de Joannis (loc. cit., p. 85): (1) That many larvae live and pupate in the stems; (2) that a certain number of larvae which have lived in the stems find a gall, enter it, perhaps feed on it and pupate in it; (3) that the galls are totally independent of any action by the larvae. It has been stated that sometimes the larva lives wholly in the gall but that has not yet been noted in this locality. The galls are stated by K. Schütze (*Iris*, XXXII, 1918, p. 121) to be woody excrescences determined by *Phytopus*

on two-year-old branches of *Salix fragilis*, L., and no doubt on allied species of *Salix*. It must be emphasised in conclusion that these ligneous galls on *S. viminalis* bear no resemblance to the swellings on *S. caprea*, which have been observed to be produced by the larvae of *S. formicaeformis*.

CURRENT NOTES.

ARGYROPOLOCE POMEDAXANA IN GERMANY.—*Argyroplote pomedaxana*, Pierce and Metcalfe 1915, which has been regarded as exclusively an English species, has been found to occur in Germany. Prof. Dr Martin Hering (*Zool. Anzeiger*, cxxxvii, 98-101: February 1942) records it from Potsdam, Dresden, Moravia and München, and adds the new foodplant *Prunus padus*. He gives its characters, together with those of *A. profundana*, Schiff. 1775, and figures the genitalia of both species. We do not understand why the latter species should be cited by various authors as *A. profundana*, Fabricius, seeing that it was described by Schiffermüller in 1775.—T.B.F.

THE National Savings Committee has issued (W.F.P. 635) a Wall Sheet Calendar for 1948 of lepidopterological interest. Each month is illustrated in colour with two Lepidoptera and these figures, if a trifle crude, are quite effective.—T.B.F.

UNFORTUNATELY, our colleague, Mr T. Bainbrigge Fletcher, is again in hospital, and proofs for this number have been sent to me. A batch of "current notes" which included an epitome of items from the current issues of many foreign journals likely to be of interest to our readers.

WE have been notified that the *Irish Naturalist* will for the future cease to publish matter dealing with Ethnographical or concerning Antiquities.

MANY foreign entomological magazines are still months behind with their issues. *The Pan Pacific Entomologist* has recently issued parts I and II, January and March 1947. In the March issue there is an article on the migration of *Vanessa cardui* in the Western States of America. From the contents of this publication the Western U.S. States would seem to have unlimited numbers of new species in all Orders of Insects.

THE *Canadian Entomologist* has now reached the issue of June 1947, and contains the Index for 1946. It is rarely that one gets articles from entomologists who are not officially connected directly in the various economic departments of the Universities.

SALE OF VARIETIES OF BRITISH BUTTERFLIES — III.

By L. HUGH NEWMAN, F.R.E.S.

(Concluded from p. 24.)

Some outstanding varieties from the Rev. J. N. Marcon's collection were left to be sold on 21st January 1948.

The Large and the Small White do not vary to anything like the same extent as the Green-veined White, and that is perhaps why prices are often so high when the two former species are offered for sale. A yellow-tinted *P. brassicae* ab. *flavescens*, one of several bred by Mr W. King, of Holloway, N. London, many years ago, and a greyish-tinted male, realised £5. An underside variety of the same species, with pale blue instead of yellowish markings, was run up to £26 in a duel between two private buyers, both anxious to obtain it, as the insect had been figured by F. W. Frohawk in his major work on the British butterflies. It was bought by Mr J. Anthony Thompson, who is now specialising in "The Whites" with the intention of forming the most comprehensive collection of them in existence. He also bought two *P. rapae*, a male with smoky grey borders, and an extreme ab. *fasciata*, for £5.

After the remarkable "croceus year" it is not surprising that collectors took a special interest in this species the following winter, and the Rev. Marcon's Collection was rich in fine forms.

An ab. *helice* var. *excessa*, a rare combination, was bought for £5, and two female *croceus*, ab. *marginata-suffusa* with practically half the hindwings on each specimen jet black, £4 10/-.

The historic *A. paphia* ab. *pallidua*, Ex. Sidney Webb, and P. M. Bright Collection (the insect figured by Mosley) was offered for the second time, with the reserve price greatly reduced. It was bought by Mr H. Douglas Bessemer for £7 10/-, and, in comparison with other varieties, was an extremely cheap insect. The fact that it was an old specimen and rather worn no doubt accounted for lack of interest in it. But if rarity alone counted it should be worth at least twenty-five pounds. [I saw it about 1876.—HY. J. T.]

Two insects were sold for £31 each, a Fritillary and a Blue. The Fritillary, probably the most lovely *A. aglaia* in existence, had coal-black forewings, with two small symmetrical patches of normal colouring along the basal portion of the costa; while the hindwings were thickly suffused with black, but the normal spotting was just discernible. It had been caught by the vendor at Swinley, Berks., during July in 1938. It was such an extreme variety that the writer actually catalogued it as *A. cydippe* in error!

The other high-priced insect was a gynandromorph *L. bellargus*. There is only supposed to be one other known, that taken before the war by the late Col. Wood. The butterfly sold by auction was caught on the well-known hills behind Folkestone town, on an August day in 1932 by Mr Marcon himself. The writer recalls also catching a *bellargus* on those same hills which he thought to be a gynandromorph, but on examining it in the bottle later, it was found to be typical female on one side and an all-blue female (ab. *ceronus*) on the other, giving the appearance of a halved gynandromorph.

OBITUARY.

GEORGE WHEELER (1858-1947).—The Rev. George Wheeler, M.A., F.R.E.S., F.Z.S., a special Life Fellow of the R.E.S., died on 9th December last, at his residence, Worthing, at the age of 89. Until the

last few years until his physical powers, sight and hearing began to fail he had for at least forty years been attracted by the study of Variation in the Lepidoptera of Britain.

Early in this century his aid was sought by the late J. W. Tutt, and he joined the panel of editorial helpers in the conduct of the privately owned *Journal of Variation*, *The Entomologist's Record*. His efficient knowledge of English, later of the Latin language, when his mind led him to the continental Lepidoptera, his knowledge of French, German and Italian became of the greatest use to the *Journal*. Perhaps no one has followed the detailed work more closely and effectively than did Wheeler.

In the 80s and 90s of last century Wheeler became interested in the British Lepidoptera. During these years J. W. Tutt was urging entomologists not only to collect but to observe and record all variation, and commenced the "*Entomologist's Record*" and issued four volumes of records of variation occurring in the British Noctuae. Wheeler was attracted and began to spend his holidays in the Alps of Central Europe. He was attracted so strongly that he compiled a most useful handbook on the "*Butterflies of Switzerland*" (1903) to further the new line of study which has made possible that colossal mass of records in the Seitz works of Germany.

Early in the century Wheeler joined the Entomological Society of London (now the Royal E.S.), of which in 1911 he was elected the Secretary, an office he held for the following ten years. He was a Vice-President in 1914, and a member of the Council in 1921. Subsequently in 1933 he was honoured for his life's work by being placed in the List of Special Life Fellows.

On the death of Tutt in 1911 a quantity of manuscript for the completion of Vol. XI of "*British Lepidoptera*" remained. Wheeler was approached by the executors and assented to complete the volume. In 1914 Wheeler completed this task with a volume of great merit as well as attractive by illustration. There are 44 plates, several coloured.

The genus *Melitaea* had always attracted Wheeler, and in the pages of the *Entomologist* he contributed a series of notes on his own experience and knowledge of the Group with an assessment of the work of previous authors in other regions.

The last years of his life were spent at his home in Worthing, Sussex, enjoying rambles when he could on the Downs. His collections of British and Continental Lepidoptera had been donated to the local Museum, which already contained a collection left by local entomologists. Of these he acted as curator, adding all that he could obtain to complete the series, especially of British species.—HY. J. T.

SPECIAL NOTICE.—Unfortunately, Mr Bainbrigge-Fletcher is again very ill, in hospital and incapacitated. Until further notice, every communication for the *Ent. Record* should be sent direct to

MR HY. J. TURNER, "*Latemar*," 25 West Drive, Cheam, Surrey.

Notes on the Season so far and Current Notes are especially wanted.

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Desiderata—Dipterous parasites bred from Lepidopterous larvae or pupae, or from any other animal.—H. Audcent, Selwood House, Hill Road, Clevedon, Somerset.

Wanted.—I need specimens of *Lycaena (Heodes) phlaeas* from all parts of the world, particularly Scandinavia, Russia, Siberia, Madeira, Canaries, N. Africa, Middle East counties, and E. Africa; also varieties from British Isles or elsewhere. I will purchase these, or offer in exchange good vars. of British Lepidoptera or many sorts of foreign and exotic Lepidoptera.—P. Siviter Smith, 21 Melville Hall, Holly Road, Edgbaston, Birmingham, 16.

Wanted for cash or exchange many species of ova, larvae or pupae, especially local forms and *A. grossulariata* from different localities, also Seitz Vol. 1 and Supplements to Vols. 1-4. Offers also, Tutt's *Practical Hints*, Parts 1 and 2, Buckler's larvae, Vols. 1-6, and Tutt's *British Noctua*, Vols. 2, 3 and 4.—Dr J. N. Pickard, F.R.S.E., 36 Storeys Way, Cambridge.

Wanted.—Various monthly parts of *Entomologist's Record* for 1914, 1915, 1916, 1917, 1919, and 1920. Please report any odd monthly parts (in wrappers as issued) prior to these years.—P. B. M. Allan, 4 Windhill, Bishop's Stortford, Herts.

Wanted urgently for genetical purposes, pupae of *Selenia tetralunaria*.—Dr H. B. D. Kettlewell, Homefield, Cranleigh, Surrey.

Wanted.—Various Books on Lepidoptera. Please send lists and price. Also wanted, Live Exotic and English Lepidopterous Material for cash or exchange for similar material or Set English Imagines.—J. K. Goody, "Weldon," 26 Carr Wood Road, Bramhall, Ches.

Sale or Exchange—R.E.S. *Trans. and Proceed.*; bound, 1911 to 1916, 1918 to 1919; unbound, 1921 to 1923, 1925; also 1917 and 1924 less part 5. New Series—*Trans.*, Vols. 1 and 2, Vol. 3, part 1. *Proceed.*, Vol. 1 and Vol. 2, part 3. *Trans. Suffolk Naturalist Society*, Vol. 3 and Vol. 4, part 1. **Wanted**, bound or unbound, *Entomologist*, Vols. 2 and 3, 1926 to 1930, 1940 to 1942. *Ent. Mont. Mag.*, 1922, and 1924 to 1942; also various volumes of R.E.S. *Trans.* List on application.—F. W. Smith, Boreland of Southwick, by Dumfries.

Wanted, for experimental purposes, a few pupae of *Endromis versicolora*, purchase or exchange.—R. W. Parfitt, 1 Dunsdon Avenue, Guildford, Surrey.

Wanted—Bristol board suitable for mounting Coleoptera. Also, Puton, A., 1878, "Synopsis des Hémiptères-Hétéroptères de France. Badonnel, A., 1943, *Faune de France*, No. 42, Psocoptères.—H. G. Stokes, 12 Roman Road, Salisbury, Wilts.

Wanted for Cash.—Tutt's *British Butterflies*, 1896: *Transactions and Proceedings Royal Ent. Soc. Ldn.* (must be almost if not quite complete).—Lionel Higgins, Linkwood, Woking.

For Disposal.—*Entomologist's Record*, Vols. 55 (1943) to 59 (1947) in parts, all in good condition. For cash, or in exchange for any of Dr Imms' Textbooks of Entomology including the latest.—Alan M. MacLaurin, Oldhall House, Kilmacolm, Renfrewshire

Wanted.—For the British Museum larval collection, larvae of Chrysomelid beetles, alive or preserved. Liberal exchange if required.—Dr S. Maulik, British Museum (Natural History), Cromwell Road, London, S.W.7.

Wanted for Cash—Ova, Larvae and Pupae of *Gastropacha quercifolia*.—R. M. Rickard, Coningsby, Lincoln.

Wanted—Nearly full-fed Larvae or perfect specimens of *Thecla betulae*, for cash or exchange other British species.—Chas. B. Antram, Clay Copse, Sway Lymington, Hants.

For Disposal—Barbut (J.), *The Genera Insectorum of Linnaeus*, 1781 (including 2 Plain and 20 Coloured Plates); *The Genera Vermium of Linnaeus*, 1783 (including 11 Coloured Plates); *The Genus Vermium of Linnaeus*, Part 2, 1788 (including 1 Plain and 13 Coloured Plates); the three works in 1 volume. What offers? I would exchange the above for Haworth, *Lepidoptera Britannica*, 1803-1827.—J. M. Chalmers-Hunt, 70 Chestnut Avenue, West Wickham, Kent.

MEETINGS OF SOCIETIES.

Royal Entomological Society of London, 41 Queen's Gate, S.W.7: May 5th, June 2, at 5.30 p.m. *South London Entomological and Natural History Society*, c/o Royal Society, Burlington House, Piccadilly, W.1; 2nd and 4th Wednesdays; 6.0 for 6.30. *London Natural History Society*: Tuesdays, 6.30 p.m., at London School of Hygiene or Art-Workers' Guild Hall. Syllabus of Meetings from General Secretary, H. A. Toombs, Brit. Mus. (Nat. Hist.), Cromwell Road, S.W.7. *Birmingham Natural History and Philosophical Society—Entomological Section*: Last Friday in month, at 7 p.m., at the Birmingham Museum and Art Gallery. Particulars from the Hon. Secretary, G. B. Manly, 72 Tenbury Road, King's Heath, Birmingham, 14.

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CONTENTS.

NOTES ON SATYRUS (MELANARGIA) ARGE, SULZ., AND S. INES, HOFFGG., <i>Orazio Querci</i> ,	57
THE FORAGING SPACE OF ANTS (HYM. FORMICIDAE) IN GREECE, W. <i>Pickles</i> ,	59
A NEW GENUS AND SPECIES OF ANT FROM NEW BRITAIN, <i>Horace</i> <i>Donisthorpe</i> , F.Z.S. F.R.E.S.,	65
COLLECTING NOTES: C. croceus and N. polychloros at Swanage, <i>Leonard</i> <i>Tatchell</i> ; Abnormal Emergence, <i>J. M. Chalmers-Hunt</i> ; M. stellatarum in March, <i>E. Barton White</i> ,	66
CURRENT NOTES,	67
OBITUARY,	68

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NOTES ON SATYRUS (MELANARGIA) ARGE, SULZ., AND S. INES, HOFFGG.

By ORAZIO QUERCI,
Vindicio, Formia (Latina), Italy.



Sulzer (*Abgg. Gesch. Ins.*, 1776, p. 144, t. xvi, f. 8, 9) describes and figures a butterfly from Sicily that he names *arge*. The locality "Aus Sicilien" is a mistake as this species has never been found in that isle. Sulzer was misled by the fact that, until 1860, the southern regions of Peninsular Italy were called the Kingdom of the two Sicilies.

In 1886 I found in the locality La Farnesina, close to Milvio Bridge, near Rome, some *arge* that I continued to catch there every year until 1899, sending specimens to Germany and Austria. Later Rostagno, comparing the Roman *arge* with those taken by us at Formia, that look like Sulzer's figures, noted that both the black pattern and ocelli were more reduced in extent in the race from Rome which he named *turatii* (*Bull. Soc. Zool. It.*, 1909, p. 233). The female of *arge* figured by Seitz (Pl. 39 f.) represents a *turatii* and not the nominotypical form of that species. In the locality near Rome, where those *arge* lived, there are now large buildings and a form similar to *turatii* has not been found anywhere since.

In 1903 we collected on Mt. Vulture, 2700 ft., near Melfi, in Basilicata, some *arge* of a form that is a transition between *turatii* and the nominotypical one. They are similar to those from S. Fili, 1500 ft., on the Calabrian Coast Range, which Stauder named *cucuzzana*.

From 1904 to 1911 we took many *arge* on the hill above Formia, at the base of Mt. Aurunci and facing the Gulf of Gaeta, up to a height of about 300 ft. In the morning these butterflies fly rapidly and restlessly, while about noon they assemble on thistle-flowers and it is easy to take them. Other *arge* similar to *cucuzzana* were caught by us, in the same Aurunci mass, on the slopes of Mt. Petrella, 3000 ft., above Spigno Satarnia.

In 1940 we collected again at Formia. The small stretch of ground, where *arge* live, has been ravaged by bombs, mines and fires, and insects were much scarcer than in the past. Some *arge* emerged from 6th May to the 21st, and we were able to get 55 males and 94 females. These latter, as often happened at Formia, were more frequent and variable than the males.

We have selected 12 males and 24 females which in some characters differ from the other specimens of the series. The largest males (pin-labelled Nos. 1 to 6) have an expanse of 48 to 54 mm. from tip to tip; the smallest (7 to 12) vary from 38 to 43 mm. The largest females (13 to 18) measure from 54 to 55 mm.; the dwarf ones (19 to 24) 42 to 44 mm. Only a few males (2, 8, 9) and females (13, 20, 28, 29) have the ocelli as small as in most *cucuzzana* from Calabria. At Formia we have never seen any specimen similar to those of race *turatii* from Rome. In the whole series of 149 *arge*, which we have before us, there are only one male (12) and one female (30) with a small additional black spot in the ocelli of the hindwings. In three males (1, 3, 4) the upper ocelli

are almost blind; in three females (25, 26, 27) the same ocelli are large, ovoidal rather than rounded, and with prominent purple pupils. There are seven females (23, 30, 32 to 36) with six ocelli on the underside of the hindwings. This scarce form corresponds to Sulzer's description: "Die Hinterflügel sind unten gelblich und haben sechs Augen." At Formia, in past years, we never saw any form of *arge* worthy of notice. Now we have one male (5) in which the zigzag lines, along the margins of the hindwings, are almost obliterated, and the black border is thicker than in the other males of the series. In one female (31) these characters are still more prominent and the black border is wide also on the underside of the same wings.

While collecting in the Iberian Peninsula we noted that the butterfly figured by Hübner with the name of *thetis*, which Hoffmannsegg changed into that of *ines*, differs from *arge* by its generally smaller size and more elongated shape of wings, but the feature of the black pattern is the same, being only more extensive. Hübner quotes "Calabria" as the country where his type was taken. This is evidently not correct as no butterfly looking like *ines* has ever been taken in Italy.

Graf Hoffmannsegg discovered in Portugal several new species: *Euchloë belemia*, Esp., *Euchloë tagis*, Esp., *Strimon esculi*, Hb., and *Zizera lysimon*, Hb. We have taken these species, together with *ines*, near Lisbon and also in the same places (Belem, and in the sandy vineyards near Cova da Piedade that Esper records in his description) where Hoffmannsegg collected many years ago. Hübner's figures are like most Portuguese *ines*.

In the Museu de Catalunya we compared 112 *ines*, taken at Espluga de Francoli in Catalonia, with 59 others collected by us at Alcacer do Sal, at sea level, in Portuguese Extremadura (not Alemtejo as I wrongly labelled those specimens when I sent them to England and America). The late Ignasi de Sagarra noted that 84 Catalan *ines* and 2 Portuguese ones had the pattern of the cell of the hindwings ending in an acute projection, as in Seitz' figure of the female of *ines* (Pl. 39 e), while in 57 specimens from Extremadura and 28 from Catalonia the same pattern was as rounded at its tip as in Hübner's type (Pl. 43, f. 196, 197). I propose to name *sagarrai*, nom. nov., the most frequent form of *ines* at Espluga de Francoli (Catalonia) in order to commemorate that clever, genial and enthusiastic lepidopterist who has been my very good friend. Seitz' figure, recorded above, represents the form *sagarrai* and not the nominotypical one. We know no other locality, besides Espluga de Francoli, where *ines* has been found in eastern Spain.

Most *ines* taken by us at Albarracín (Aragón) in June 1924; at Uña in the Serrania de Cuenca (New Castile) in June 1926, 1928 and 1933; and at Jerez del Marquesado in the Sierra Nevada (Andalusia) in May 1925 and 1926, always in mountain surroundings, 3300 to 3600 ft., have the same features as those from Portugal. In rainy seasons, as in 1925, 1928 and 1933, they most resemble Hübner's figures, being smaller and darker than in dry ones. The specimens that we took at Alcacer do Sal, in the spring of 1927, were produced by larvae grown in very arid surroundings, which seems to be more favourable to their development.

THE FORAGING SPACE OF ANTS (HYM. FORMICIDAE) IN GREECE.

By W. PICKLES.

INTRODUCTION.

During the summer months of the year 1945 observations were made on the activities of ants on an area of ground situated near the sea shore some seven miles south-south-east of Piraeus, the principal port of Greece. The area was flat, very rocky with hardly any depth of soil on it: where there was any soil and between the crevices of the rocks coarse grass grew in the early months of the year. During the heat of the summer this was completely dried up and much of it blown away by the winds. There were on the area a number of conifers and some of these grew to a good height. In some of these conifers there were nests of ants, other ants nested in the crevices between the rocks in the soil there.

The species of ants which were studied were *Messor barbarus*, L., subsp. *meridionalis*, Er. André, *Aphaenogaster* (*Aphaenogaster*) *testaceopilosa*, Lucas, *Camponotus* (*Taenaemyrmex*) *aethiops*, Latr., *Camponotus* (*Myrmentoma*) *keisenwetteri*, Roger, *Cremastogaster* (*Acrocoelia*) *auberti*, Emery, *Cremastogaster* (*Orthocrema*) *sordidula*, Nyl., and *Plagiolepis pygmaea*, Latr. These investigations were carried out from 9th January 1945 to 1st October 1945, when the area was enclosed and access forbidden. There were seven species of ants on the area and much of it was common feeding territory to one or more species. The activities of each of the species will be taken separately.

(a) *Cremastogaster* (O.) *sordidula*, Nyl.

Only one nest of this species of ant was observed on the area and records were made from early February until it ceased to exist (3rd May 1945). On the latter date it was then certain that the nest was no longer active. The territory covered by this ant was, as far as could be determined, purely in a horizontal plane, the vertical distribution being negligible. The maximum distance to which this ant travelled was 4 ft., which would give a foraging territory of 50 sq. ft. As there was no record of these ants having a vertical distribution at this site during the investigation it is unsafe to make deductions on their sphere of activity in any but the horizontal plane, although this species was found climbing trees in Algeria, 11th October 1943. At this site in Algeria they also travelled much further from the nest than at this Greek site. Foraging was carried out both singly and in processions in which they collected, amongst other things, the petals of a small plant which resembles a species of ? plantain.

(b) *Camponotus* (T.) *aethiops*, Latr.

There were three nests of this species of ant on the area and one of them (No. 10) displayed a great difference in its ecological activities to the other two nests. This nest was under a stone and went down into the ground ramifying between the rocks. The other two nests were beneath the trunks of conifers and the galleries of the nests ramified between the roots of the trees.

The difference in the situations of the nests appears to have had a profound influence on the territory which was covered by the ants emerging from them. The territory of those from nest No. 10 was purely terrestrial whilst the territories of those from the other two nests were chiefly arboreal in distribution.

In the case of nest No. 10 the maximum distance travelled was 24 ft. to a point 23 ft. away. This is very much smaller than the maximum distance travelled by this species in Italy referred to in Pickles (1946c): granted that in the Italian case referred to there were artificial means to help the ants to get from one place to another whilst at this spot there were no such means. In the cases of two other nests which were at the bases of trees the territories were practically purely arboreal. In one of these cases (No. 5), the greatest distance to which the ants travelled from the tree was to a point 16 ft. away, whilst they went to the top of the tree which was 31 ft. high. So that in this case the vertical distribution was twice that of the horizontal. On many occasions the ants were found foraging up the tree solely, there being no foraging along the ground. In both these cases the vertical height to which the ants travelled was greater than the horizontal distance travelled and therefore justifies the three dimensional consideration of the foraging space of ants in contrast to the horizontal distribution solely. It must always be realised that in the vertical distribution there is less freedom of movement as the lines of the processions are limited by the presence or absence of branches in any given direction (*i.e.*, there must be support for the ants).

(c) *Aphaenogaster* (A.) *testaceo-pilosa*, Lucas.

On the area of ground under observation, there was one nest of this species of ant. This nest was beneath a stone and went down into the ground and the galleries went along the fissures in the rock beneath the stone. There was evidence that the ants at this site were excavating in the soil because quite a lot of soil excavation took place during the Spring and the Autumn months of 1945—quite a large dump of soil being formed at the close of the survey.

This species of ant seemed to prefer the shady days or the evenings for its activities, as during the summer months it was rarely active during the middle of the day: it would only come out in the evenings. In the early part of the year (March and April) it was abroad during the afternoons also. At this area this species of ant foraged entirely on the ground and the maximum distance recorded was on 27th May 1945. This was 20 ft. 6 ins. This gives a foraging territory of 1321 sq. ft. At this particular area this ant was not seen indulging in arboreal foraging.

(d) *Cremastogaster* (A.) *auberti*, Emery.

This species of ant was represented by one permanent nest on the area which later in the summer founded a daughter nest. The parent nest was situated in the stump of the trunk of a conifer which was about 7 ins. high and 8 ins. in diameter. The nest was active throughout the summer months until the stump was chopped down by some Greeks in October 1945. The daughter nest was first recorded on 26th June 1945. This was formed at the base of a small conifer up which ants from the parent nest foraged all summer. This tree was situated some 4 ft. 9 ins. to the north-east of the parent nest.

These ants foraged both along the ground to some low bushes where they attended Aphides and also up the tree already mentioned so that here again we have a case of three dimensional foraging. Although there was a good deal of random foraging there were three permanent processional routes, along which the ants travelled regularly and which remained in existence all through the survey. One was to the tree mentioned above, the second was to the south-west and was 6 ft. long, and the other was in a north-westerly direction, this being 29 ft. long. This was the maximum distance to which ants travelled from this nest on this area. This gives its foraging area as 2643 sq. ft. in extent.

Although there was foraging to the bush continually during the Summer months, the main procession led to the fir tree some 4 ft. 9 ins. to the north of the nest. A regular and well defined procession was usually to be found going to this tree throughout the summer months. There were Aphides on this tree which were being attended by the ants. The height of this tree was 15 ft. 6 ins. Their foraging space in this direction was bounded by the limits of the branches of the tree. The furthest limit of the tree was within the maximum ground foraging distance. This being taken as 29 ft. then the Potential Foraging Space will be 51,101 cubic feet.

The subsidiary nest of this species (No. 4A) at the base of the tree confined its activities to the tree. Ants from this nest would join in the procession from nest No. 4 and go up the tree along with them. Only on a few occasions did the ants from nest No. 4A forage along the ground and then only to a short distance from the base of the tree.

(e) *Camponotus (Myrmentoma) keisenwetteri*, Roger.

There were two nests of this species of ant recorded on the area; one was near the tree mentioned above in connection with the ant, *C. auberti*, being three feet from the tree and towards the north-east, the other being 29 ft. from the tree towards the south-west.

This ant foraged abroad both along the ground and also up the tree. These ants from the nest near the tree (No. 8) foraged chiefly up it, they made no processions, foraging occurring singly. This tree was also the foraging ground of the ants of this species at Nest No. 9, some 29 ft. away to the south-west. At one time or another they were found on all parts of the tree, so that as with *C. (A.) auberti* in this direction they did not travel along the ground further than the base of the trunk of the tree which they ascended and travelled along the branches to a point 39 ft. away. This was the greatest distance to which the ants travelled which gives a horizontal feeding territory of 4780 sq. ft. Besides having this large feeding territory, this ant was also found higher up trees other than this tree. At the tree nest No. 7, which was also the site of a nest of the ant *C. (T.) aethiops*, *C. (M.) keisenwetteri* was encountered at a height of 18 ft. from the ground; this particular ant was coming down the tree at the time when it was seen and so it had been higher up the tree. So that given the opportunity and the material support necessary this ant was also capable of considerable vertical distribution. We may therefore regard this nest as the centre of a foraging space with the maximum distance from the nest (39 ft.) as the radius. This gives as the Potential Foraging Space 124,288 cu. ft.

(f) *Plagiolepis pygmaea*, Latr.

There was one nest of *P. pygmaea*, this being near the centre of the area. The maximum distance recorded here was less than that found in the investigations carried out on this species of ant in Italy (see Pickles, 1946d).

(g) *Messor barbarus*, L., subsp. *meridionalis* Er. André.

There was one nest of this subspecies on the area near to the centre of the area. The ants from this nest foraged along the ground solely. On 21st April 1945 from this nest there was a procession of ants leading out in a southerly direction for a distance of 37 ft. This was the maximum distance recorded for this species. Although this is an ant of similar size to *Messor barbarus barbarus*, L., its maximum distance was so much smaller than that recorded for the latter species of ant, i.e., 150 ft. This must be due to local factors. As it was never seen up trees this ant has apparently only a horizontal territory. Calculated on the maximum distance recorded this territory is 4303 sq. ft.

TYPES OF NESTS.

Of the species of ants studied in Greece the nests were chiefly ground nests though some of them were situated at the bases of conifers. Details of these nests will be given under each species.

M. b. meridionalis. This species of ant made its nest in the crevices in the rocks filled with soil. They excavated during the rainy season and on several occasions these ants were observed to bring out their seeds from the granaries below to be dried around the mouths of the nests. When they were dried they were returned below.

C. (T.) aethiops. Whereas in Italy these ants were found in stumps of trees used for the support of vines (see Pickles, 1946c) in Greece they were purely terrestrial nests, chiefly situated at the bases of the conifers growing on the area.

P. pygmaea. These ants are found in the soil only and beneath stones. On another area not far away from the one we are now considering (see Pickles, 1946b) this species of ants made its nests beneath the pebbles on the sea-shore. In all these cases circular mounds of excavated material were made.

C. (O.) sordidula. On the area in Greece this species was purely terrestrial, the mounds round the mouth-openings were conical rather than "ramparts" as described by Forel (1928). These small cones were about $\frac{3}{4}$ ins. in height and several of them had a trackway along which the ants moved, grooved out in the soft soil of which they were made. There may be one or more of these grooves on one cone.

C. (A.) auberti. This species was found in the stump of an old conifer as before stated. The ants were tunnelling in the wood of the stump itself and there appeared to be considerable excavation in the soil beneath the stump. A nursery was found beneath the stone and old needles from the conifers nearby were covering it. The daughter nest of this species at the base of the tree (No. 4A) was, as far as could be ascertained, among the roots at the base of the tree referred to earlier in the text

A. (A.) testaceo-pilosa. This ant excavated its nest beneath a large flat stone and the excavated material was piled up outside the nest near the mouth opening on the side away from the stone.

C. (M.) keisenwetteri. Both nests of this species on the area were excavated in the soil and had single mouth-openings. There was no sign of excavated material. Nest No. 8 had no mound at all or even a cone of excavated material, it was just a hole in the ground like that of an earthworm's burrow except that it was of smaller diameter. Nest No. 2 had a cone of excavated material (or rather a pillar of it) with the mouth at the top. There was no groove running down the side as was the case with *C. (O.) sordidula*. It measured about $\frac{1}{4}$ in. in height and about the same in diameter.

INTERRELATIONS AND COMMON FEEDING TERRITORY OF THE ANTS.

The ants on this area had much common feeding territory and much of the territory of the other ants was within that of *C. (T.) aethiops*, and therefore common to more than one species of ant.

Round about the tree near to nest No. 4 there was an area of ground which was common territory to four of the species on the area, i.e. *C. (T.) aethiops*, *C. (A.) auberti*, *C. (M.) keisenwetteri* and *M. b. meridionalis*. These ants with the exception of the latter species were all found foraging up the tree which was near nest No. 4 at one time or another either singly or in processions or one species only or more than one at one and the same time.

The four species appeared to forage on this tree without any quarrels taking place (at least as far as the observations here carried out showed). On several occasions *C. (M.) keisenwetteri* was up the tree and met members of the nest of *C. (A.) auberti* when they appeared to avoid each other but there was no real fighting.

At nest No. 7, which was a nest of *C. (T.) aethiops*, *C. (M.) keisenwetteri* was observed up the tree even when the inhabitants of the nest at its roots were abroad and somewhat agitated round about the mouth-opening at the base of the trunk of the tree. Again the ants of these two species appear to live harmoniously together, or at least they appeared never to fight during the time that these observations were made. They appeared to avoid each other rather than fight.

GENERAL ECOLOGICAL OBSERVATIONS.

(a) DRYING THE SEEDS.

On several occasions in Greece the ants *M. b. meridionalis* were seen to bring from the nest seeds and these were spread out over the mound outside the nest to dry off in the sun. The harvesting ants are known to do that if there is any danger of the granaries being damp and germination occurring or fungoid growth appearing. But these ants were not seen to make the usual "midden" of waste as was observed in Algeria, etc.

(b) FIGHTS AND QUARRELS.

Battles between two nests of the ant *C. (T.) aethiops* had apparently occurred at various times as there were occasions when ants which had lost their abdomens and others decapitated were seen at the bases of the trees beneath which were the nests of this species.

On 11th May 1945 an unusual state of affairs was observed. The ants from nest No. 4 (*C. (A.) auberti*) were foraging in procession to the tree only. Round about this nest there were several individuals of *C. (T.) aethiops* behaving in a peculiar manner. They were scraping their heads, jaws, legs, etc., on stones. It was found that heads and thoraces of *C. (A.) auberti* were fastened to these parts of their anatomy. One of the latter species attacked a *C. (T.) aethiops* which afterwards went round in circles as if in distress. I watched a specimen of *C. (A.) auberti* attack one of *C. (r.) aethiops*: it caught its left middle leg in the tibial region and the latter ant tried to get away from the smaller ant but this was firmly attached to it by its mandibles. The larger ant tried and tried by rolling, scraping, etc., to get rid of the smaller species but was unable to do so. In the struggle the *C. (A.) auberti* lost its abdomen; but still it held on with its mandibles. I watched the struggle for half an hour and the larger ant appeared to be weakening through the continued struggling. I was unable to stay longer on this particular occasion, but judging by the number of dead specimens lying about it would appear that this ant finally exhausts itself in trying to rid itself of the smaller ant which has fixed itself so firmly to it and so eventually dies.

(c) FORAGING.

The method of foraging used by *M. b. meridionalis* was to form processions. Of the other species only two produced any points of interest. One was *C. (T.) aethiops* and the other *A. (A.) testaceo-pilosa*. Although the former species would forage both in processions and singly, sometimes they would issue from the nest in small numbers. An example of this was on 13th June 1945 when a party of ten workers left the nest No. 10. These ten ants emerged from the nest at 6.45 p.m. They kept in a group for a distance of 18 ft., when they broke up having come across a rock surface 6 ft. long and 2 ft. 6 ins. wide. They went all over the rock apparently wandering aimlessly for five minutes or more before beginning to return to the nest.

A. (A.) testaceo-pilosa. This species usually foraged singly, but on 24th March 1945 a party issued from nest No. 3 to collect a caterpillar; this account is dealt with fully in Pickles, 1946a.

(d) WIND.

Most of the ants studied in this investigation appear to have been unaffected by the wind. On several occasions *C. (T.) aethiops* was found foraging to the top of the tree at nest No. 7 even during winds of high velocity. Although these ants were seen to be badly buffeted about on the outer branches, none were observed to be blown off the tree. They were still able to go about their business foraging. 4th July 1945 was a particularly windy day and although I had great difficulty in climbing the tree and the ants were also badly buffeted about, they were able to go to the very top of the tree (26 ft.) without mishap.

SUMMARY.

From the data which have been collected in this survey it would seem that, particularly with some species of ant it is necessary to make observations in three dimensions and so establish a Foraging Space rather

than just a Foraging Territory if we are to get a true picture of their ecological relationships. It would also appear that this three dimensional treatment is chiefly necessary for ants which attend Aphides and therefore tend to climb trees and tall plants. The harvesting ants of the genus *Messor* in particular would appear to keep close to the ground, at least the few inches that they do climb to cut off inflorescences from the grasses, etc., are negligible when compared with the great horizontal distance travelled.

ACKNOWLEDGMENT.

I wish to thank Mr H. St. J. K. Donisthorpe for kindly identifying the ants for me.

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A NEW GENUS AND SPECIES OF ANT FROM NEW BRITAIN.

By HORACE DONISTHORPE, F.Z.S., F.R.E.S., etc.

SUBFAMILY *Myrmecinae*.

TRIBE *Tetramoriini*.

GENUS *Dorothea*, Gen. n.

Head subrectangular; *clypeus* prolonged between the frontal carinae, posterior ridge of same bordering the antennal foveae; no carina on cheeks; no *scrobes* present; *frontal carinae* not very short, nor close together; *antennae* 12-jointed, club 3-jointed; *maxillary palpi* jointed; *labial palpi* jointed. *Thomax* impressed at *meso-epinotal* suture; *epinotum* unarmed. No *spurs* to posterior pairs of tibiae.

Dorothea novobritainae, Sp. n.

Black to blackish-brown, shining; mandibles, scapes, articulations of legs reddish, funiculi and tarsi reddish-yellow. Clothed with longer and shorter fine yellow hairs. *Head* subrectangular, longer than broad, slightly broader anteriorly than posteriorly, posterior angles bluntly pointed, posterior border slightly excised, anterior portion of head finely longitudinally striate, vertex smooth and shining with a few very small scattered punctures; *mandibles* large, triangular, bluntly pointed at apex, masticatory border not armed; *clypeus* convex with anterior border rounded in middle, sinuate at sides, posterior border projecting

between the frontal carinae and with sides forming a ridge bordering the antennal foveae; *frontal area* deep rounded behind; *frontal furrow* short, smooth, not very narrow; *frontal carinae* slightly divergent behind; *eyes* fairly large, oval, flat, situated about the middle of sides of head; *antennae* 12-jointed, *scape* curved reaching end of longitudinal striae on head, *funiculus* gradually thickened to apex, *club* 3-jointed, fairly large, pubescent, last joint bluntly pointed, longer than the two preceding taken together. *Thorax* very finely punctured, longer than broad, broadest at humeral angles, no suture between pro- and mesothorax, suture between meso- and epinotum impressed; *pronotum* convex, with a short neck margined anteriorly, and bluntly pointed prominent humeral angles; sides of *mesonotum* narrowed to impression between meso- and epinotum; *epinotum* with angle between dorsal surface and declivity well marked, *dorsal surface* convex, longer than declivity, *declivity* slightly concave; *meso-* and *metathorax* longitudinally striate. *Petiole* long, narrow, pedunculate, with a narrow rounded node; *post petiole* broader and slightly higher than petiole, rounded above and at sides; *gaster* oval, narrowed in front and behind, equally convex above and below, longitudinally striate at junction with post petiole. *Sting* small. Legs moderate, *femora* incrassate. No *spurs* to posterior pairs of tibiae; *claws* large, simple. Long. 4.5 mm. Genotype *Dorothea novobritannae*, Sp. n.

Described from three workers, New Britain, Herawat, July 1946, B. A. O'Connor.

In appearance this new genus reminds one of the *Pseudomyrcinae*, but, of course, it does not belong to that subfamily.

COLLECTING NOTES.

C. CROCEUS AND N. POLYCHLOROS AT SWANAGE.—It is of interest to record that on 12th April one specimen of *C. croceus* was observed and on 13th April one *N. polychloros* in excellent condition, settled with outspread wings close to a dirty puddle at the foot of the Parbeck Hills; nearby are plenty of Elms and Sallows. *P. aegeria*, ovipositing, *G. rhamni*, *N. io*, and *A. urticae* were more numerous than usual. During the past few hot days *P. brassicae* and *P. rapae* are very much in evidence.—LEONARD TATCHELL, Rockleigh Cottage, Swanage, 19.iv.48.

ABNORMAL EMERGENCE.—I was somewhat surprised when a ♂ *Mesoleuca albicillata* hatched out in my cages yesterday—this early emergence seems to me almost phenomenal since I understand it to be normally a July insect. The specimen referred to is a cripple, and one that I bred from ova deposited by a wild ♀ captured last year. I may add that there can be no question of forcing, since there has been no artificial heat in the room in which the pupa has been kept. If you consider this observation of sufficient interest to publish in the *Entomological Record and Journal of Variation*, you are perfectly at liberty to do so.—J. M. CHALMERS-HUNT, 70 Chestnut Avenue, West Wickham, 8th April 1948.

M. STELLATARUM IN MARCH.—One specimen of *stellatarum* was visiting *Aubretia* flowers here on 1st March. On 10th March two were seen at the same time, and on several days up to the end of the month and during the first week of April single specimens visited the garden, mostly at *Aubretia* blossoms on a rockery. On each occasion one's presence was ignored at a distance of three feet.—E. BARTON WHITE, F.R.E.S., Branton, N. Devon.

CURRENT NOTES.

DR GUSTAV DE LATTIN is a young Austrian lepidopterist, known to British entomologists for his work on the *Parnassius* of Anatolia. He has survived the war, even the Russian front, and is now back at Entomology. His subject is the Lepidoptera of the Middle East. A subscription to the *Entomologist's Record* has put him in the seventh heaven and he writes with enthusiasm for the "ray of sunshine in his spiritual isolation." For those who would care to disperse that isolation, his address is:—Dr Gustaf de Lattin, (22b) Geilweilerhof, Post Siebeldingen—Pfalz, Germany (French Zone). He would welcome correspondence, and, above all, literature concerning his subject.—M. B.

THE Annual Spring Exhibition held by the Amateur Entomologists' Society on 30th March was again a very successful and well-attended meeting. A room had been set apart for an elementary talk introducing the study of Entomology. This was illustrated with simple apparatus, apparatus that could be home-made, or easily adapted from objects obtainable in an ordinary household. Although the Society issues some most valuable pamphlets on the study and preservation of insects of other Orders, the exhibitors were Lepidopterists. Among the exhibits were the results of breeding, the captures made during the wonderful year 1947, including numerous unusual forms of immigrants, species, etc., all proving that the efforts of the officials and older members of the Society had done well and that the coming generation of Entomologists would make good when life settles down after the baneful influence of war.

PART I of Vol. IX of the *Transactions of the Society for British Entomology* contains the 2nd portion of a "List of the Lepidoptera of Dorset," by W. Parkinson Curtis, F.R.E.S. This is more than a List, for each species is introduced by notes often considerable and always useful. Since the death of Prout the Geometers have become very divergent in classification and not in accord with books or Lists in the hands of students. An Index is added of Families, Genera and Species, a very necessary addition. The Families dealt with are *Ocneriidae*, *Sterrhidae*, *Geometridae*, *Selidosemidae*, *Polyplocidae*, *Sphingidae*, and *Notodontidae*. The author has a strong belief in the use of genitalia characters in the determination of the position of many species among the *Geometridae*. The paper is a continuation of the records of the three generations of the Dale family years ago, but, of course, adapted to the advance of the present times.

THE Report of the New Forest Committee for 1947 contains a large amount of detail of the History, Areas, and Administration; the Woodlands, the Open Portions and Amenities, etc. There are two folded maps in a Pocket, a most useful map showing everything likely to be useful to lovers of the wild life of the area, and a second map of detailed connections proposed in relation to the surround authorities.

Bolletino Lab. di Zoologia. Gen. et Agr. (It.), vol. xxxii (1941-1943) has recently appeared. Over 300 pages with a dozen Memoirs, of which Silvestri contributes three. These studies are mainly on the biology of the insects that are detrimental to fruits for which Italy is famous; the Olive is prominent among these crops.

THE *Ann. Report of the Canadian Ent. Soc.* for 1946 has been published. The matter reported is mostly economic, the studies of members who are in various departments of university or institution engaged in economic work, and rarely one gets a paper devoted to investigation of the biological life of the insects under discussion.

OBITUARY.

MR H. G. JEFFERY, of Newport, Isle of Wight, passed away on 20th January after a brief illness. He was perhaps best known as a coleopterist, but was interested in all branches of natural history, and his knowledge of the birds and plants of the Island was outstanding. A member of the Isle of Wight Natural History Society for many years he read papers at their meetings from time to time. The writer has happy memories of rambles in his company during the last forty years. It was with him that I first became acquainted with *Gryllus campestris*, L., and the trilling of these fascinating insects during a hot summer day on the Downs near Arreton will always be one of my most cherished memories. When I visited him last summer he was keeping alive a fine specimen of *Gryllotalpa gryllotalpa*, L., which had been brought to him for identification. On the occasions when the South London Entomological Society had a field meeting to the Isle of Wight, Mr Jeffery was invariably there to welcome us. He it was who discovered the first specimens of *Trypeta vectensis*, Collin, previously unknown to science (*Ent. Record*, 1937, March, p. (3) of Supplement). On several occasions he found the beetle *Lytta vesicatoria*, L., usually in numbers and feeding on the leaves of ash. I recall his showing me a glass bowl containing hundreds of newly-hatched active larvae of this beetle, and pointing out how they all crowded towards the light as the bowl was slowly revolved. Visitors to the Island often sought information from him about local insects, and he was never happier than when accompanying them in search of a particular rarity. The Island will not seem the same to many of us now he has gone.—S. WAKELY.

ERRATA:—April, p. 54, line 5 of 3rd Current Note should read "have been mislaid."

EXCHANGES.

Subscribers may have Lists of Duplicates and Desiderata inserted free of charge. They should be sent to Mr HY. J. TURNER, "Latemar," West Drive, Cheam.

Wanted—American Hesperiidæ, especially from Costa Rica, West Indies, the Guyanas, Guatemala, Honduras, Nicaragua, Venezuela, Colombia and Bolivia. Write K. J. Hayward, Instituto Miguel Lillo, Calle Miguel Lillo 205. Tucuman, Republica Argentina.

Desiderata—Dipterous parasites bred from Lepidopterous larvae or pupae, or from any other animal.—H. Audcent, Selwood House, Hill Road, Clevedon, Somerset.

Wanted.—I need specimens of *Lycaena (Heodes) phlaeas* from all parts of the world, particularly Scandinavia, Russia, Siberia, Madeira, Canaries, N. Africa, Middle East counties, and E. Africa; also varieties from British Isles or elsewhere. I will purchase these, or offer in exchange good vars. of British Lepidoptera or many sorts of foreign and exotic Lepidoptera.—P. Stutter Smith, 21 Melville Hall, Holly Road, Edgbaston, Birmingham, 16.

Wanted for cash or exchange many species of ova, larvae or pupae, especially local forms and *A. grossulariata* from different localities, also Seitz Vol. 1 and Supplements to Vols. 1-4. Offers also, Tutt's *Practical Hints*, Parts 1 and 2, Buckler's larvae, Vols. 1-6, and Tutt's *British Noctua*, Vols. 2, 3 and 4.—Dr J. N. Pickard, F.R.S.E., 36 Storeys Way, Cambridge.

Wanted.—Various monthly parts of *Entomologist's Record* for 1914, 1915, 1916, 1917, 1919, and 1920. Please report any odd monthly parts (in wrappers as issued) prior to these years.—P. B. M. Allan, 4 Windhill, Bishop's Stortford, Herts.

Wanted urgently for genetical purposes, pupae of *Selenia tetralunaria*.—Dr H. B. D. Kettlewell, Homefield, Cranleigh, Surrey.

Wanted.—Various Books on Lepidoptera. Please send lists and price. Also wanted, Live Exotic and English Lepidopterous Material for cash or exchange for similar material or Set English Imagines.—J. K. Goody, "Weldon," 26 Carr Wood Road, Bramhall, Ches.

Sale or Exchange—R.E.S. *Trans. and Proceed.*; bound, 1911 to 1916, 1918 to 1919; unbound, 1921 to 1923, 1925; also 1917 and 1924 less part 5. New Series—*Trans.*, Vols. 1 and 2, Vol. 3, part 1. *Proceed.*, Vol. 1 and Vol. 2, part 3. *Trans. Suffolk Naturalist Society*, Vol. 3 and Vol. 4, part 1. **Wanted**, bound or unbound, *Entomologist*, Vols. 2 and 3, 1926 and 1928, 1941 and 1942. *Ent. Mont. Mag.*, 1922, 1924-5, 1933-41. List on application.—F. W. Smith, Boreland of Southwick, by Dumfries.

Wanted, for experimental purposes, a few pupae of *Endromis versicolora*, purchase or exchange.—R. W. Parfitt, 4 Dunsdon Avenue, Guildford, Surrey.

Wanted—Bristol board suitable for mounting Coleoptera. Also, Puton, A., 1878, "Synopsis des Hémiptères-Hétéroptères de France. Badonnel, A., 1943, *Faune de France*, No. 42, Psocoptères.—H. G. Stokes, 12 Roman Road, Salisbury, Wilts.

Wanted for Cash.—Tutt's *British Butterflies*, 1896: *Transactions and Proceedings Royal Ent. Soc. Ldn.* (must be almost if not quite complete).—Lionel Higgins, Linkwood, Woking.

For Disposal.—*Entomologist's Record*, Vols. 55 (1943) to 59 (1947) in parts, all in good condition. For cash, or in exchange for any of Dr Imms' Textbooks of Entomology including the latest.—Alan M. MacLaurin, Oldhall House, Kilmacolin, Renfrewshire

Wanted.—For the British Museum larval collection, larvae of Chrysomelid beetles, alive or preserved. Liberal exchange if required.—Dr S. Maulik, British Museum (Natural History), Cromwell Road, London, S.W.7.

Wanted—Ova. Preserved or Living Larvae and Pupae of English and Foreign Sphingidae, especially *atrapos*.—R. M. Rickard, Coningsby, Lincoln.

Wanted—Nearly full-fed Larvae or perfect specimens of *Thecla betulae*, for cash or exchange other British species.—Chas. B. Antram, Clay Copse, Sway Lymington, Hants.

For Disposal—Barbut (J.), *The Genera Insectorum of Linnaeus*, 1781 (including 2 Plain and 20 Coloured Plates); *The Genera Vermium of Linnaeus*, 1783 (including 11 Coloured Plates); *The Genus Vermium of Linnaeus*, Part 2, 1788 (including 1 Plain and 13 Coloured Plates); the three works in 1 volume. What offers? I would exchange the above for Haworth, *Lepidoptera Britannica*, 1803-1827.—J. M. Chalmers-Hunt, 70 Chestnut Avenue, West Wickham, Kent.

MEETINGS OF SOCIETIES.

Royal Entomological Society of London, 41 Queen's Gate, S.W.7: June 2nd, July 7th, at 5.30 p.m. *South London Entomological and Natural History Society*, c/o Royal Society, Burlington House, Piccadilly, W.1; 2nd and 4th Wednesdays; 6.0 for 6.30. *London Natural History Society*: Tuesdays, 6.30 p.m., at London School of Hygiene or Art-Workers' Guild Hall. Syllabus of Meetings from General Secretary, H. A. Toombs, Brit. Mus. (Nat. Hist.), Cromwell Road, S.W.7. *Birmingham Natural History and Philosophical Society—Entomological Section*: Last Friday in month, at 7 p.m., at the Birmingham Museum and Art Gallery. Particulars from the Hon. Secretary, G. B. Manly, 72 Tenbury Road, King's Heath, Birmingham, 14.

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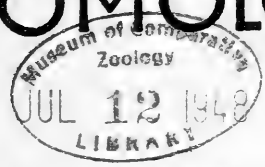
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CONTENTS.

SECOND SUPPLEMENT ON THE LONGICORN COLEOPTERA OF WALES, <i>Raymond R. U. Kaufmann,</i>	69
SYNTORMON MACULA, PAR. (DIPT. DOLICHOPODIDAE), AN ADDITION TO THE BRITISH LIST, <i>E. C. M. d'Assis-Fonseca,</i>	70
FIELD NOTES FROM ANATOLIA. III. FETHIYE, <i>Malcolm Burr, D.Sc., F.R.E.S.,</i>	71
OBSERVATIONS ON HY. J. T.'S NOTES, <i>Signr. Orazio Querci,</i>	74
COLLECTING NOTES: Transplanting of Local Insects, <i>N. D. Riley</i> ; <i>Aplasta ononaria</i> Colonies, <i>Id.</i> ; Foodplant of <i>Tholomiges turfosalis</i> , <i>Wk.</i> , <i>P. B. M. Allan</i> ; <i>Plutella incarnatella</i> , <i>Steud.</i> , <i>W. Fassnidge</i> ; An Attempt to Rear <i>Hyppa rectilinea</i> , <i>Esp.</i> , <i>J. W. Heslop Harrison</i> ; The Foodplants of the China Mark Moth, <i>Hydrocampa nymphaeta</i> , <i>L.</i> , in the Scottish Western Isles, <i>Id.</i> ,	75
CURRENT NOTES	76
REVIEW,	78

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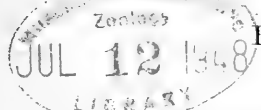
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SECOND SUPPLEMENT ON THE LONGICORN COLEOPTERA OF WALES.

By RAYMOND R. U. KAUFMANN.



Interest in the Welsh Longicorn beetles has not flagged during the past year, and, largely due to the efforts of Messrs R. S. Ferry, M. G. Fraser, and E. F. Gilmour, quite a number of records new to various counties are now brought forward, together with some older records collated from rather obscure and scarce sources.

The summarised analysis of county species may now be modified as follows:—

County Symbol.	BR.	CD.	CM.	CR.	DB.	FT.	GM.	MG.	MN.	PB.	RA.
No. of species found	8	6	2*	9	13	6	28†	4	19	7	9

* Unclassified. † Including importations.

DISTRIBUTIONAL DATA.

(New County Records are marked with a dagger (†)).

CERAMBYCIDAE.

Aseum striatum, L.—Flint (FT.)†: Cefn Bychan (near Mold), M. G. Fraser, not uncommon in cut Scots pine logs.

A. striatum, L., *a. agreste*, F.—FT.†: With the above.

Rhagium bifasciatum, F.—Brecon (BR.)†: Llangammarch Wells, 6/47 (R. S. Ferry), on rhododendron and lupin flowers. Carmarthen (CM.)†: referred to in the Dillwyn MS. Catalogue, now in the Library of the Royal Entomological Society, but no precise locality is cited. FT.: Cefn Bychan, 8/47 (E. A. J. Duffy, M. G. Fraser, and R.R.U.K.), numerous larvae, pupae and a few adults were noticed in rotten Scots pine stumps and logs; the locality is rich in this species, but no aberrational forms hatched out from the many examples taken home for rearing. Merioneth (MN.): Dyffryn Gwy, 6/47 (E. F. Gilmour).

R. bifasciatum, F., *a. latefasciatum*, Pic.—MN.†: taken with the type by Gilmour at Dyffryn Gwy.

R. mordax, Degeer—BR.†: Llangammarch Wells, 6/47 (R. S. Ferry), on bracken. MN.: Aberdovey, 5/47 (E. F. Gilmour).

Stenocorus meridianus, L.—BR.†: Llangammarch Wells, 6/47 (R. S. Ferry), on hazel branches. Denbigh (DB.): Valle Crucis (*vide* Chappell, J., 1886, *Young Naturalist*, 7: 57-61). This locality apparently produced a number of interesting Longicornia in the past, and most of Chappell's records (recorded as "Llangollen" in Fowler) are to be referred to Valle Crucis, which lies in the neighbourhood. No modern records are available, but the district should still be productive.

S. meridianus, L., *a. chrysogaster* Schrank—Caernarvon (CR.)†: Llandudno, 1873 (W. M. Burman, in coll. E. G. Bayford). FT.†: a dead ♀ has been found under bark near Cefn Bychan by Fraser in July 1947.

Grammoptera ruficornis, F.—BR.†: Llangammarch Wells, 6/47 (R. S. Ferry), on hawthorn.

Alosterna tabacicolor, Degeer—BR.†: taken by Ferry in the same locality with the above species.

Judolia cerambyciformis, Schrank—BR.†: Llangammarch Wells, 6/47 (R. S. Ferry), on guelder rose and in flight.

Strangalia maculata, Poda, a. *disconotata*, Pic—MN.†: Aberdovey, 8/47 (E. F. Gilmour).

S. maculata, Poda, a. *undulata*, Muls.—MN.†: with the above (Gilmour).

Clytus arietis, L.—BR.†: Llangammarch Wells, 6/47 (R. S. Ferry) on hazel. FT.: Cefn Bychan (M. G. Fraser) on beech logs.

LAMIIDAE.

Tetrops praeusta, L.—DB.: Valle Crucis (Chappell, l.c.). Overlooked in previous lists.

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- Kaufmann, R. R. U. 1946. The Longicorn Coleoptera of Wales, *Ent. Rec.*, 58: 105-8.
 — 1947. Supplementary notes on the Longicorn Coleoptera of Wales, *Ent. Rec.*, 59: 70-1.
 — 1948. Notes on the distribution of the British Longicorn Coleoptera, *Ent. mon. Mag.*, 84: 66-85.

SYNTORMON MACULA, PAR. (DIPT., DOLICHOPODIDAE), AN ADDITION TO THE BRITISH LIST.

By E. C. M. d'ASSIS-FONSECA.

Among a quantity of small Dolichopodidae caught in the Coombe Dingle (Bristol, Glos.) district on 7th April 1947, a date on which the snow still lay in sheltered spots, two females were found which I identified as *Syntormon macula*, Par., a name not appearing in the British List. At the time, however, I was prepared to find that this name was a synonym of a known British species, and the two specimens were put aside awaiting fuller information on the synonymy of the genus. It was not until February of this year (1948) that Mr L. Parmenter, who had examined one of the specimens, aroused renewed interest in the capture and encouraged me to search the same locality in the early spring months in the hope of finding the male, at present unknown. On 14th March, a fine warm day, I visited Blaize Woods, adjoining Coombe Dingle, and succeeded in capturing a single female *macula* in the, by then, almost dried up, stony bed of a tributary of the River Trym. The same stream-bed was again visited on 20th and 21st March, and during that week-end I succeeded in finding a further 28 specimens, all females. The entire stream-bed was aswarm with both sexes of *Campsicnemus curvipes*, Fall., and the occasional *S. macula*, which seemed to prefer the dry stones to the mud, could only be distinguished at close range by its slightly larger size and paler colouring. Fortunately *S. denticulatus*, Zett., from which *macula* would have been indistinguishable in the field, was entirely absent from this section of the stream-bed although very plentiful in other parts of Coombe Dingle. The species was by no means abundant, and the total catch to date of 35 females represents many hours of systematic search, generally in a crouching position.



PEAK OF SANDRS DAGH.



HIGH ON SANDRS DAGH. CAMP OF MOUNTAIN SHEPHERDS.
FOREST OF *P. NIGRA*.



BOZ DAGH. ALPINE MEADOW.



BOZ DAGH. JUNCTION OF ZONE OF
PINUS BRUTEA AND *P. NIGRA*.



THE HIGH PEAKS ABOVE THE FOREST ZONE ON SANDRS DAGH.

Mr H. Audcent, who examined one of the specimens, pointed out that Parent in his full description of the species, as *S. macula*, Oldenb. (*Diptera*, 4, 57-8), describes the acrostichal bristles as "microscopic," whereas in my specimens these bristles are strongly developed, and he suggested my sending a specimen to Mr J. E. Collin for confirmation. A specimen captured on 26th March was therefore despatched in fresh condition to Mr Collin, who kindly confirmed that the fly was undoubtedly *macula*, Par., and explained the apparent discrepancy as regards the acrostichals by the fact that these were described by Parent as microscopic *in contrast* to the conspicuously long ones of *S. setosa*, Par., with which species *macula* was originally compared. Mr Collin also suggested that females had probably hibernated and both sexes would be found later in the year, possibly July. The female is easily recognised by the reddish-yellow front coxae and by the presence of a brownish spot on the wing a third of the way along the apical section of the 4th longitudinal vein, and Mr Collin suggests that the male, when found, will have a very narrow face, similar to that of *S. mikii*, Strobl.

It is hoped that the publication of this note will encourage other dipterists to pay particular attention to *Syntormon* species encountered in similar habitats in other parts of the country.

Specimens have also been sent to Mr Audcent, Mr Parmenter, and to Dr H. Oldroyd for the National Collection.

18 Grange Park, Henleaze, Bristol, 12th May 1948.

FIELD NOTES FROM ANATOLIA. III. FETHIYE.

By MALCOLM BURR, D.Sc., F.R.E.S.

Plates 1 and 2.

It is a longish run in a lorry from the charming lake of Köychehiz to Fethiye, through delightful country. The road skirts the lake, through waterlogged groves of *Liquidambar* and the *undescribed Alnus*, the former making the still, hot air redolent of incense, with tangles of *Smilax* and wild vine, with every now and then a flock of bee-eaters, hawking like living jewels in the sunshine, a wonderful sight, the whole set off by patches of shingly beach.

On a big plane by a wayside café I found the leaves covered with a curious little scale, exactly like a miniature tortoise, with the separate plates on the carapace looking quite distinct. Then over a ridge covered with *Pinus brutea*, down to the valley of the Dalaman Chay, crossed by a modern three-span ferro-concrete bridge. It is a curious river, with a wide bed of white sand and grey gravel, contrasting sharply with the prevailing red tint of the hillsides and the dark green pines, which come down to the water's edge without a trace of bog or rush. A few miles further brought us to Dalaman, a hamlet where there is an extensive government farm, where we lunched at a wayside café.

There were a few rough hedges, within which I could hear *Platycleis* chirping, but only a scattered individual here and there, which I did not succeed in catching. On the bed of a dried marsh, with clumps of bramble, *Vitex* and tufts of dense grass, there were some of that hand-

some and vigorous grasshopper, *Euprepocnemis plorans*. One tuft of grass had been burnt, and the *E. plorans* out of it was almost black. This is the first time I have noted this curious phenomenon outside equatorial Africa, where it is normal. How interesting it would be to carry out some experimental work upon it. In Africa that would be easy. In England it could be done best, I think, with *Myrmeleotettix maculatus*, which is so variable in coloration, and often produces melanic specimens. The other *E. plorans* were normal in coloration, if anything, paler than usual.

Then we resumed our drive, through alternating valleys decorated with crops and oleander, streams with rich, redolent curtains of Liquidambar, festooned with wild vine and *Smilax*, up over a high and steep ridge with a commanding view over a deep and impressive ravine, Kizil Bel, the lower levels of which were filled with a rich flora—oleander in full flower; *Styrax*, myrtle, with its delicate creamy bunches of flowers; *Pistacia*, smelling of turpentine; *Ceratonia*, the locust bean, and high *Erica arborea*, yielding on the high levels to the perpetual *Pinus brutea*. A regular Tertiary flora.

Suddenly we broke out on to a delightful little bay, with *P. brutea* and *Vitex* down to the water's edge. I hunted among the shrubs and clumps of rushes, but found no Orthoptera, except one or two *Acrotylus patruelis* and *Oedipoda coerulescens*, but not the pink-winged *Oed. miniata* (= *gratiosa*), which is the species I should have expected on this southern coast. From there an hour or two's run over wooded hills brought up to the valley and charming bay of Fethiye.

This is marked on the old maps by the name of Makri, which has been replaced by the modern Fethiye, pronounced Fet-hi-yé, in honour of a distinguished Turkish politician Fethi Bey. It is a pleasant little town in a land-locked bay, surrounded by rocky hills and some high, grey mountains. It is the old Telmessus, one of the most ancient towns of Caria, whose famous diviners were consulted by Croesus and Alexander. There are no Hellenic remains here, but some curious rock-hewn tombs in classical style, but without a trace of inscription.

We found hospitality with the officials of the Forest Department, who gave us comfort in their roomy guest house, and we had meals under big shady trees in the beautiful garden. This was decorated by magnificent *Hibiscus*, and great clumps of high, colourful *Zyganae* that attracted numbers of *P. machaon* and *A. pandora*.

I hoped to find a rich fauna here, but was disappointed. There was not much life moving. On the banks of the bay the usual vegetation, clumps of oleander, *Pistacia terebintha*, with *Daphne*, *Statice* and *Phyllirea*, among which the only Orthoptera I noticed were *Mantis religiosa* (nymph), *Acrotylus patruelis*, *Oedipoda caerulescens*, *Acrydium* cf. *subulatum* (?) and *Aiolopus strepens*.

There was a promising-looking salt marsh just beyond our garden, but it seemed lifeless.

Even bird life seemed surprisingly thin. There were doves (*P. dekaokto*, I believe), numerous and vocal, but no pigeons; some house sparrows, but no other finches; no swifts, swallows, martins or hoopoes; an occasional magpie and roller and some crows completed the list of everyday birds in Fethiye, though I saw bee-eaters higher up the valley and at one place the Alpine swift. It was an adventure to get a glimpse

of an Egyptian vulture, rising on his spiral climb, disregarding the crows that teased him, a heron flying by and some gulls out to sea.

On the steep slopes below the vertical cliffs that are marked by the rock tombs there are clumps of *Capparis spinosa* and *Periploca*, with leaves like lilac, looking very green against the grey rocks and red soil. Here were a few *Sphingonotus*, similar to *coerulans*. The tombs were too shallow to shelter a cave fauna, and the only living creatures in them were some handsome but formidable-looking hornets.

Below the garden of the Forest Department there are some small fields separated by nearly dry ditches, with more life than the country round. I could hear *Platypleis* tinkling, but all I could find was *Incertana incerta*, Br., which is interesting. This very distinct species was described in 1882 by Brunner from an unlabelled specimen bought from a dealer. It is now known to be indigenous to the region round the Bosphorus, where it is the most numerous Dectid. I do not know what records there are of its distribution, but imagine this is a new one.

In the ditches there were *Tropidopola*, presumably *longicornis graeca*, Uv., mostly in the green immature stage, but the nymphs were already assuming the adult coloration. When disturbed the adults fly freely; they are a typical savannah type of grasshopper, and have the usual trick of keeping a stem of grass between themselves and an enemy, just like a woodpecker on a tree. There were plenty of *E. plorans*, but I never saw another black one. There were also plenty of immature *Conocephalus*, like *C. fuscus*, and *Acrydium*. The commonest grasshoppers were *A. strepens* and *Acr. patruelis*. The few beetles and Hemiptera had a homely, familiar look about them.

Pezotettix was already copulating, and *M. religiosa* adult. The only less usual grasshopper was *Locusta migratoria*, ph. *solitaria*, which was fairly common.

A walk along the coast was also disappointing. I turned over dozens of logs and stones, many of which* looked most promising, but not a sign of an earwig. Only the routine things, *Acr. insubricus*, *Oed. gratiosa*, *Sph. coerulans*, *A. thalassina* and *Anacridium aegyptium*, already adult. *P. podalirius* came cruising by, which I netted; one hindwing was missing, but it did not seem to impair its powers of flight.

Quite a commotion was caused when a big brown, red and yellow creature landed on a rock, puzzling until I netted it and found a huge Asilid fly, the biggest I have ever seen, with a great big hornet in its grasp, presumably *Vespa orientalis*, quite dead. I would have liked to have seen the attack, for the hornet is a very formidable fellow, who can give a nasty sting.

Peter Davis and Lord Kinross, who had joined us, made an excursion up Baba Dag, a high limestone mountain on the coast. They brought me back a fresh, green *Pholidoptera* resembling *Ph. chabrieri*, which they had found on a *Verbascum* and a purple-legged *Calliptamus*, and one or two butterflies, one reminiscent of *L. corydon*, and a striking Vanessid unfamiliar to me, with heavily indented wings and prominent palpi.

On 1st August I left in a lorry on the long return journey, not sorry to leave the steamy, relaxing, malarial atmosphere of this beautiful spot, where the collecting had been so disappointing.

(To be continued.)

OBSERVATIONS ON HY. J. T.'S NOTES.

By Signr. ORAZIO QUERCI.

1. *armoricanus*.—I shall admit your views, but it remains the fact that the species was discovered by Godart and not by Oberthür.

2. *mathewi*.—I do not think it is a different species from *dorus*. I caught many hundred *dorus* and saw a perfect transition from *mathewi* to *bieli*. This last name is the eldest for the Portuguese form, but I have no positive data to separate *bieli* from *dorus* as to be two different species.

3. *helvetica*.—At Florence (R. Stazione di Entomologia Agraria) I have handled Rühl's type of *helvetica*. It seems co-specific with *pseud-athalia* and not with the Central European *athalia*.

4. *dubiosa*.—I can not admit that *dubiosa*, Röber is a species different from *napi*. It is but the exuberant form of the species.

5. *glauce*.—I have some biological data from our captures in Tripolitania and Portugal to support my thesis that *belemia*, *glauce*, *crameri* and *ausonia* are four different species. I have read Boisduval's remarks, 23rd October 1844, and I think he is not right because the pupae are also different. I have found the four species emerging at the same time and seen no doubtful individual.

6. *esculi*.—Is certainly a quite different species from *ilicis*. We were collecting them emerging together. The differences are very striking.

7. *avis*.—My wife found the spot where this scarce species lives near Barcelona together with *rubi*. *Avis* looks quite different. We remained at Barcelona just to get this Iberian rarity, of which we collected only 8 specimens.

8. *argyrognomon*.—I have several hundred Spanish *argyrognomon*-like specimens from the Montes Universales and Pyrenees. I see no specimen which resembles the true *argyrognomon* from Central Europe of which I have large series. The specimens from Cuenca are similar to the Japanese ones. In the Pyrenean mass, at moderate level, the form is like that from Central Spain. In alpine surroundings of the same Pyrenees the form belongs to the *armoricana*, Ob. (*aegus*, Chapm., *difficilis*, Stauder, *aegusella*, Ver.) group. I see a perfect transition, in accordance with the level, from *insularis* to *armoricana*.

9. *corydonius*.—Some specimens among those which emerged in Serrania de Cuenca in the wet summer 1928 are very like Herrich-Schäffer figure. I think that *caelestissima*, Ver., is but the form of *corydonius* in the dry seasons. Last year, as the Serrania de Cuenca was as damp as many central European localities, I found that the *coridon* was about identical to that from Germany and it looks very different from *corydonius* and *aragonensis*, which live together in the *cretaceous* ground. The fourth species, *hispana*, which is peculiar to the *triassic* zone, may be found 10 miles from the spot where the other three species live. Last year we got a magnificent set of *coridon*-like specimens and everything seems to confirm my thesis that the species are four.

10. *boetica*.—Is co-specific with *desfontainii*. I am looking at Rambur's figures which do not differ from the large series of *desfontainii*

from Africa, Castile and Catalonia. Please to observe that Rambur's figures (Planche I, Nos. 1 and 2) are not *desfontainii*; they are large *aurinia*. I have several specimens as big as the *aurinia* figured by Rambur.

11. *athalia*.—I have a large series of specimens from the Pyrenees. They seem to be *helvetica*, but this problem is very hard.

12. *arge*.—Does not live in Spain, where it is replaced by its exerge *thetis* (*ines*). I well know *arge*, of which I collected many specimens in Calabria, Basilicata, Campania and Latium. I have a few hundred Spanish and Portuguese *thetis*; they are all different from *arge*; also the Catalan specimens.

13. *amyntas* (*iphis*).—I have a considerable series from the Pyrenees. It seems that they all belong to the exerge *iphioides*. I see no specimens like the Central and Eastern *amyntas*, of which I am looking at a very rich set. Please note that the collection of this Museum is magnificent. Only France and England are poorly represented, but for the rest of Europe and Asia there are large series of every form.

14. Schiffermüller.—I had always written so, but I read Schiffermiller in Staudinger's Catalogue.

COLLECTING NOTES.

TRANSPLANTING OF LOCAL INSECTS.—The Committee for the Protection of British Insects of the Royal Entomological Society of London has recently had under consideration the desirability of keeping records of attempts to introduce British Insects into new habitats. It is believed that many entomologists have made experiments of this nature which are nowhere recorded and may therefore confuse local records. The Committee would welcome information concerning activities of this kind so that it may be filed in the Society's rooms, where it would be treated as confidential and made available only for approved investigations.—N. D. RILEY, Honorary Secretary.

APLASTA ONONARIA COLONIES.—It has come to the notice of the Protection Committee of the Royal Entomological Society of London that at the moment there exist one or two isolated colonies. of this insect in this country, perhaps resulting from migrant parents. Entomologists are asked, if they happen on these colonies, to refrain from disturbing them or taking specimens, and to do their utmost to preserve them.—N. D. RILEY, Honorary Secretary.

FOODPLANT OF *THOLOMIGES TURFOSALIS*, WK.—The foodplant of this species appears to be unknown. Perhaps the larvae feed on the flowers of a certain marsh plant or plants. Will some field lepidopterist, in whose district this species occurs, obtain the assistance of a botanist this coming season and make an ecological survey of the flora constituting the insect's habitat? Then if eggs could be obtained, the foodplant might be ascertained by "trying out" the emergent larvae on various "salads" composed of the associated flora.—P. B. M. ALLAN.

PLUTELLA INCARNATELLA, STEUD.—Among a number of micros that were very kindly given to me recently by Prof. P. Buxton were two specimens of *P. incarnatella*, Steud., in excellent condition. They bore the following data: 1, Aviemore, N.B., McArthur; 2, 6th September 1911, Kilmarnock Branly, N.B., D. J. Jackson. Meyrick gives as the earliest record for Britain: Elgin (Logie), one in 1913, probably local; and adds "perhaps hibernating."

Mr Philip Harwood has taken the moth fairly commonly in the Aviemore district since he went to live there, by beating pine, juniper, etc., even as late as December (*Ent. Rec.*, 1943, Vol. LV, p. 13). Hence it would appear that the earliest captor did not record his discovery, and that the species hibernates in thick cover as do others of the genus.—W. FASSNIDGE, 4 Bassett Crescent West, Southampton.

AN ATTEMPT TO REAR *HYPPA RECTILINEA*, ESP.—On 14th June 1947, I captured a fine female example of this species at rest on a window, Kinloch Castle, Isle of Rhum. It was placed in a chip box, where it laid an abundance of eggs, which, after a lapse of three weeks when we were wandering from island to island in the Hebrides, hatched safely. As the little larvae appeared, they were placed on a supply of bramble upon which they thrived. At intervals, a little willow or willow was introduced, both of which proved equally acceptable. Most of the larvae fed up safely and reached their last instar, when willow was exclusively employed. Thus, in late September, I had a fine healthy brood of larvae. Great was my dismay when, during the last week of that month they commenced to die so that, in the end, none were left.—J. W. HESLOP-HARRISON, King's College, Newcastle-upon-Tyne.

THE FOODPLANTS OF THE CHINA MARK MOTH, *HYDROCAMPA NYMPHAEATA*, L., IN THE SCOTTISH WESTERN ISLES.—This very attractive insect occurs plentifully around most weedy lochs and lochans, both in the Inner and Outer Hebrides, where it may be taken in July and August. In general, it feeds upon the pondweeds, *Potamogeton natans* and *P. polygonifolius*. However, I have seen it on a very unusual food-plant in the Isle of South Uist. In that island, we have detected a fine new British pondweed, *Potamogeton epihydrus* var. *Nuttallii*. This pondweed, hitherto only known from North America, can now be reported from a peaty lochan just north of Loch Ceann a' Baigh, South Uist, where it supports a colony of the China Mark moth.—J. W. HESLOP-HARRISON, King's College, Newcastle-upon-Tyne.

CURRENT NOTES.

MR BAINBRIGGE-FLETCHER is very ill with heart failure, and is the latest news I have of him. All matters for publication to be sent direct to me. Notes both Collecting and Current will be very useful.—HY. J. T.

Two *Reports of the U.S. National Museum*, 1946 and 1947, have come to hand. They usually contain details of the entomological material acquired during the 12 months. In 1946 10,000 Mosquitoes and 4000 slides of the same were an outstanding addition, 34 slides of the

chigger mites, 28 species was a fine small addition, 2500 insects were received from the Geological Department. In 1947 there were 239 accessions amounting to 117 species. Many of the accessions were comparatively small, and from other departments or personal collections.

THE *Bull. Soc. Ent. de Belg.* comes regularly to date now and contains short papers on numerous groups of Insects and accounts of successful meetings held twice each month. The *Pieridae* of the world have been under discussion on several occasions recently.

THE *Ent. News* (Amer.) for January has been issued nearly to date. This journal always contains a summary of the entomological literature of over 100 journals of the world. The *E.R.* is no. 29 and *Eos* (Spanish) is no. 112.

FROM Lund (Sweden) a separate in English, "Normal and Pathological Histology of the Ovaries in *Bombus*, Latr. (Hymen.)," by Nils-Fertil Palm, pp., large oct.

READERS and friends will be pleased to know that Dr Malcolm Burr has successfully recovered from his operation; his card to me "resuming to work." We must congratulate him.—HY. J T.

THE *Irish Naturalist*, July, October, January, Nos. 3, 4, 5. As a rule there is not much entomological news in this interesting regional magazine. No. 3 has a record of years of collecting Macro-Lepidoptera in the Tipperary and Waterford S.E. area of Ireland by Dr H. Murray. His long list contains many species rare in the island and a few like *Epione advenaria*, *Leptidea sinapis*, *Deilephila livornica*, and *Nudaria senex*. Many *Noctuae* were obtained from his light-trap, including a number of species which are rather local in Britain. A. F. O'Farrell contributes a record of his observations of Lepidoptera in Northern Ireland in 1943-5, including a long list of *Noctuidae* and *Geometers*. It would have been very interesting to have recorded the racial variation of many of these species from typical British examples. No. 4 contains individual records: *Nymphalis antiopa* on the seashore at Bannow, Co. Waterford; about 90 larvae of the "Eyed Hawk" in a garden in Tyrone; 2 *Argynnis paphia* in Co. Down; list of a small collection in May 1946 of Lepidoptera in Galway—the early date is unusual and interesting.

WE have received from our long-time correspondent, now of the Institut Miguel, Silh Tucuman, far up the Argentine interior, 6 separates of his more recent issue. The volume is an annotated Catalogue of the *Hesperiidae* of Columbia; 200 pp. of an immense amount of work. The separates are xvi, xvii, and xviii of his descriptions of new species of *Hesperiidae*; another deals with American *Hesperiidae* Larvae, etc., etc.

THE Swedish *Opuscula Entomologica*, Heft 4, December 1947, contains an article on the Lepidopterous Fauna of the country, with a plate of 21 interesting forms which are referred to in the text by the author, Frithiof Nordström.

THE *Pan-Pacific Entomologist* has new records of discoveries of new species on the Pacific Coast. It is rarely that the matter relates to the Lepidoptera or even to the Coleoptera. No. 4, October 1947. "A New Subspecies of *Melitaea*" was described by P. G. Wind, viz., *M. leanira*, ssp. *daviesi*, Wind. A small series was taken at Tuolumne, California. It can be distinguished easily by its bright orange-russet forewings and the very dark black-brown hindwings.

THE last two parts of the Spanish *Eos*, Vol. XIII, No. 3, September, and No. 4, December, contained articles on the Orthoptera. Both are by the same author: "The Orthoptera of the Spanish Sahara" in the first; the second, "The Orthoptera of Mediterranean Occidental." The author is E. Morales Agauno.

THE *Entomological News*, Nos. 7, 8, 9, 10. No. 7—"Reflections on the Subspecies" is a short discussion on status; it is in scientific classification. No. 9—A curious talk may attract some by its title, "How far can a fly fly?" No. 10—"Sterility in Insects," by Richards, a subject which may start a long discussion.

REVIEW.

THE PROCEEDINGS AND TRANSACTIONS OF THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY, 1946-47—196 + xxxvi pp. and XVIII plates, 22/6. The volume under notice reflects great credit on the publication committee, and offers something of interest to many varied tastes. The major papers are An Introduction to the Study of the Collembola, illustrated by four plates, *Angeronia prunaria*, L.: Its Variation and Genetics, with three plates, two of them in colour; and *Caloptilia*, Hb., A Genus of Tineina, with a coloured plate, carrying on the policy of this society in producing papers on the British Microlepidoptera. The wide range of subjects includes papers on the British Bats, Bird Photography, Sex Attractant Principles in Moths, Flowers of the Cape Peninsula, and various accounts of collecting and some excellent micro-photographs. The volume is well cross-indexed, and the general make-up shows no falling off in the quality of this Society's Annual Volume, while the size exceeds anything published by it in the past. We look forward to the 1947-48 volume with confidence and trust that the Publications Committee will be equally successful.—S. N. A. J.

EXCHANGES.

Subscribers may have Lists of Duplicates and Desiderata inserted free of charge. They should be sent to Mr HY. J. TURNER, "Latemar," West Drive, Cheam.

Wanted—American Hesperidiidae, especially from Costa Rica, West Indies, the Guyanas, Guatemala, Honduras, Nicaragua, Venezuela, Colombia and Bolivia. Write K. J. Hayward, Instituto Miguel Lillo, Calle Miguel Lillo 295, Tucuman, Republica Argentina.

Desiderata—Dipterous parasites bred from Lepidopterous larvae or pupae, or from any other animal.—H. Audcent, Selwood House, Hill Road, Clevedon, Somerset.

Wanted.—I need specimens of *Lycaena (Heodes) phlaeas* from all parts of the world, particularly Scandinavia, Russia, Siberia, Madeira, Canaries, N. Africa, Middle East counties, and E. Africa; also varieties from British Isles or elsewhere. I will purchase these, or offer in exchange good vars. of British Lepidoptera or many sorts of foreign and exotic Lepidoptera.—P. Siviter Smith, 21 Melville Hall, Holly Road, Edgbaston, Birmingham, 16.

Wanted for cash or exchange many species of ova, larvae or pupae, especially local forms and *A. grossulariata* from different localities, also Seitz Vol. 1 and Supplements to Vols. 1-4. Offers also, Tutt's *Practical Hints*, Parts 1 and 2, Buckler's larvae, Vols. 1-6, and Tutt's *British Noctua*, Vols. 2, 3 and 4.—Dr J. N. Pickard, F.R.S.E., 36 Storeys Way, Cambridge.

Wanted.—Various monthly parts of *Entomologist's Record* for 1914, 1915, 1916, 1917, 1919, and 1920. Please report any odd monthly parts (in wrappers as issued) prior to these years.—P. B. M. Allan, 4 Windhill, Bishop's Stortford, Herts.

Wanted urgently for genetical purposes, pupae of *Selenia tetralunaria*.—Dr H. B. D. Kettlewell, Homefield, Cranleigh, Surrey.

Wanted.—Various Books on Lepidoptera. Please send lists and price. Also wanted, Live Exotic and English Lepidopterous Material for cash or exchange for similar material or Set English Imagines.—J. K. Goody, "Weldon," 26 Carr Wood Road, Bramhall, Ches.

Sale or Exchange—R.E.S. *Trans. and Proceed.*; bound, 1911 to 1916, 1918 to 1919; unbound, 1921 to 1923, 1925; also 1917 and 1924 less part 5. New Series—*Trans.*, Vols. 1 and 2, Vol. 3, part 1. *Proceed.*, Vol. 1 and Vol. 2, part 3. *Trans. Suffolk Naturalist Society*, Vol. 3 and Vol. 4, part 1. **Wanted**, bound or unbound, *Entomologist*, Vols. 2 and 3, 1926 and 1928, 1941 and 1942. *Ent. Mont. Mag.*, 1922, 1924-5, 1933-41. List on application.—F. W. Smith, Boreland of Southwick, by Dumfries.

Wanted, for experimental purposes, a few pupae of *Endromis versicolora*, purchase or exchange.—R. W. Parfitt, 1 Dunsdon Avenue, Guildford, Surrey.

Wanted—Bristol board suitable for mounting Coleoptera. Also, Puton, A., 1878, "Synopsis des Hémiptères-Hétéroptères de France. Badonnel, A., 1943, *Faune de France*, No. 42, Psocoptères.—H. G. Stokes, 12 Roman Road, Salisbury, Wilts.

Wanted for Cash.—Tutt's *British Butterflies*, 1896: *Transactions and Proceedings Royal Ent. Soc. Ldn.* (must be almost if not quite complete).—Lionel Higgins Linkwood, Woking.

For Disposal.—*Entomologist's Record*, Vols. 55 (1943) to 59 (1947) in parts, all in good condition. For cash, or in exchange for any of Dr Imms' Textbooks of Entomology including the latest.—Alan M. MacLaurin, Oldhall House, Kilmacolm, Renfrewshire

Wanted.—For the British Museum larval collection, larvae of Chrysomelid beetles, alive or preserved. Liberal exchange if required.—Dr S. Maulik, British Museum (Natural History), Cromwell Road, London, S.W.7.

Wanted—Ova. Preserved or Living Larvae and Pupae of English and Foreign Sphingidae, especially *atrapos*.—R. M. Rickard, Coningsby, Lincoln.

Wanted—Nearly full-fed Larvae or perfect specimens of *Thecla betulae*, for cash or exchange other British species.—Chas. B. Antram, Clay Copse, Sway Lymington, Hants.

For Disposal—Barbut (J.), *The Genera Insectorum of Linnaeus*, 1781 (including 2 Plain and 20 Coloured Plates); *The Genera Vermium of Linnaeus*, 1783 (including 11 Coloured Plates); *The Genus Vermium of Linnaeus*, Part 2, 1788 (including 1 Plain and 13 Coloured Plates); the three works in 1 volume. What offers? I would exchange the above for Haworth, *Lepidoptera Britannica*, 1803-1827.—J. M. Chalmers-Hunt, 70 Chestnut Avenue, West Wickham, Kent.

Wanted to Purchase—African Section of Seitz' *Macrolepidoptera of the World*, both Butterfly and Moth Volumes, either bound or in parts.—D. G. Sevastopulo, c/o Ralli Brothers Ltd., P.O. Private Bag, Mombasa, Kenya Colony.

MEETINGS OF SOCIETIES.

Royal Entomological Society of London, 41 Queen's Gate, S.W.7: July 2nd, September 1st, at 5.30 p.m. *South London Entomological and Natural History Society*: 6.0 for 6.30. *London Natural History Society*: Tuesdays, 6.30 p.m., at London School of Hygiene or Art-Workers' Guild Hall. Syllabus of Meetings from General Secretary, H. A. Toombs, Brit. Mus. (Nat. Hist.), Cromwell Road, S.W.7. *Birmingham Natural History and Philosophical Society—Entomological Section*: Last Friday in month, at 7 p.m., at the Birmingham Museum and Art Gallery. Particulars from the Hon. Secretary, G. B. Manly, 72 Tenbury Road, King's Heath, Birmingham, 14.

TO OUR READERS.

Short Collecting Notes and Current Notes. Please, Early.—Eds.

All MS. and EDITORIAL MATTER should be sent and all PROOFS returned to HY. J. TURNER, "Latemar," 25 West Drive, Cheam.

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Articles that require ILLUSTRATIONS are inserted on condition that the AUTHOR DEFRAYS THE COST of the illustrations.

Communications received:—Thomas Greer, Fergus J. O'Rourke, O. Querci, H. Donisthorpe, Malcolm Burr, Surg.-Lt. Comm. H. M. Darlow, D. G. Sevastopulo, D. Fearnehough, R. J. R. Levett, E. C. S. Blathwayt, E. P. Wiltshire, A. E. Wright.

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CONTENTS.

SELIDOSEMA PLUMARIA, SCHIFF., R. TYRONENSIS, <i>E. A. Cockayne, D.M., F.R.C.P.</i>	79
MIDDLE EAST LEPIDOPTERA, IX: TWO NEW FORMS OR SPECIES AND THIRTY-FIVE NEW RECORDS FROM CYPRUS, <i>E. P. Wiltshire, F.R.E.S.</i>	79
COLOUR VARIATION IN PUPAE OF EUPHYDRIAS AURINIA, <i>T. D. Fearnough</i>	88
A CRITICAL EXAMINATION OF THE SECTION OF A "CHECK LIST OF BRITISH INSECTS" BY KLOET AND HINCKS, DEALING WITH THE "CHERMIDAE" OR PSYLLIDAE, <i>G. Heslop-Harrison, B.Sc., Ph.D., F.R.S.E.</i>	89
AN APPEAL, <i>Wm. Fassnidge</i> ,	91
COLLECTING NOTES: Striking Aberration of <i>Colias croceus</i> , <i>K. H. Bobe</i> ; Lepidoptera at Bickenhall, Somerset, <i>A. H. Turner</i>	92
CURRENT NOTES	94
REVIEW	94

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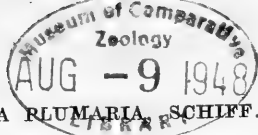
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Figs. 1, 2—*Cochlidion creticum drayl.* Types, ♂ ♂.
 Fig. 3—*Hemerophila trypanaria*. Type ♀.
 Fig. 4—*Hipparchia syriaca cyrtica*, Stgr., asymmetrical aberration, ♀.

**SELIDOSEMA PLUMARIA, SCHIFF., R. TYRONENSIS.**

By E. A. COCKAYNE, D.M., F.R.C.P.

In a bog near Lough Neagh, Co. Tyrone, Northern Ireland, a race of *Selidosema plumaria* used to occur, which Mr Thomas Greer thinks is worthy of a name. The bog was similar to a moss near Witherslack and was the home of *Coenonympha tullia*, *Euphydryas aurinia*, and other interesting species, but it exists no longer, and the insects which used to frequent it have disappeared.

Selidosema plumaria, Schiff., r. **tyronensis**, r. nov.

The race is characterized by its small size, the length of the forewing varying from 15 to 17 mm., compared with a length of 19 to 21 mm. usual in specimens from the New Forest. The dark marginal area is narrower than it is in English examples, and the darker median shade is much fainter in both sexes. Dark speckles are present on the ground colour of many specimens, and in some the speckling is dense.

Type: ♂, Dylonghan, near Lough Neagh, Co. Tyrone, 31.vii.1940, Thomas Greer.

Allotype: ♀, same data.

Paratype: ♂, near Lough Neagh, Co. Tyrone, 1.viii.1918, Thomas Greer.

Barrett figures the form, Pl. 286, 2 b ♂, and 2 c ♀.

In the same bog ab. *fumosa*, Greer, and ab. *intermedia-fumosa*, Turner, were taken. Both these are mosaics; in *fumosa* most of the surface is melanic and only small streaks and pale ground colour remain, whereas in *intermedia-fumosa* there are streaks and patches of melanic colour on the pale ground. It is probable that both are determined by the same gene. They are comparable with *Ectropis crepuscularia*, Hb., ab. *varia*, Cockayne, of which some examples are almost completely melanic and others show large areas of the normal pale ground colour.

Mr Greer has most generously presented the type, allotype, and paratype of r. *tyronensis* and the type of ab. *fumosa* to the British Museum for incorporation in the Rothschild-Cockayne-Kettlewell collection of British Lepidoptera.

MIDDLE EAST LEPIDOPTERA, IX: TWO NEW FORMS OR SPECIES AND THIRTY-FIVE NEW RECORDS FROM CYPRUS.

By E. P. WILTSHIRE, F.R.E.S.

My recent visit to Cyprus, where I spent March to May 1947 at Kyrenia on the North Coast, shows that, although the fauna of the island is already fairly well known, there is still much to discover and report. The completest list that has been published is that of Rebel (1939) (*Mitt. der Muench. Ent. Ges. J.*, XXIX, Heft 4), enumerating 482 species, including Micros. The present article, dealing only with Macro-Lepidoptera, consists of two parts: the first, an annotated list of 35 species not hitherto recorded or at least not enumerated by Rebel, including descriptions of two that are new to science; and the second

consisting of some general remarks followed by notes on species mentioned by Rebel, where there was something to add or criticise.

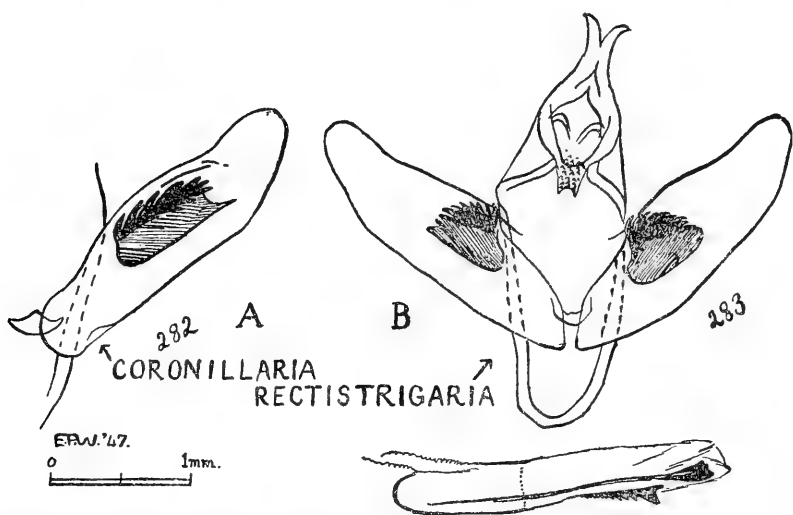
I am indebted to Messrs Charles Boursin, R. J. Collins, E. B. Ford, W. Forster, G. Warnecke, E. Wehrli, and Francis Hemming for assistance on various problems; and to Messrs Dray & Waring and Mrs Dray for their hospitality in Cyprus in the neighbourhood of Kyrenia.

PART I: NEW RECORDS FOR CYPRUS.

COCHLIDIIDAE.

1. *Cochlidion creticum* Rebel, **drayi** subsp. n. (or sp. n. ?).

♂, Palp, head, thorax, antenna, feet and forewing, orange-brown. Tip of palp, paler. A white tuft at base of antenna. Thorax robuster than *limacodes*, Hufn. Forewing, glossy, unmarked. Fringes, dark grey distally. Underside of forewing, matt



Male genitalia, ventral open view, with aedeagus separated of:

Fig. A—*Pseudoterpna coronillaria*, Hübner (right valve only).

Fig. B—*Pseudoterpna rectistrigaria* b. sp.

orange-brown, fringes as on upperside. Hindwing, smoky grey-brown, yellow towards costa; termen, paler pinkish. Fringes, grey, blackish at anal angle. Hindwing underside, paler than forewing, more orange on costa.

Span: 26 mm.

Holotype: ♂, 13.5.47; Paratype, ♂, 18.5.47, Kyrenia, Cyprus (in coll. m.).

The species is to be obtained at light among thickets of *Quercus coccifera*. This tree, having been almost exterminated by the Cyprians, is extraordinarily local; consequently this moth, which has not been noticed among the more luxuriant, more widespread and better-worked stands of the Cyprian oak (*Q. alnifolia*) on the South Cyprian Mountains, is also very local. I name it in honour of Mr Dray, whose private nature-reserve, on the coast one mile west of Kyrenia, allowed this tree to thrive again and the moth to survive. It is less pale, more warmly coloured than *creticum*, Rebel, and perhaps specifically distinct; it is larger, robuster and plainer than *limacodes*, Hufn.

LYMANTRIIDAE.

2. *Ocneria terebinthi*, Freyer.
Coast and hills, *Pistacietum lentisci* scrub, v.
3. *Lymantria dispar*, L.
One male only, on coast, flying by day, 29.v.

AGROTIDAE.

4. *Agrotis forficula*, Ev., f. *hadjina*, Stgr.
Wooded hills, c. 750 ft., 22.iv. Common on one night.
5. *Cucullia verbasci*, L.
Larvae on *Celsia arcturus*, c. 1000 ft., iii.-iv. (See *Ent. Rec.*, LIX, p. 94, for further details.) Adults emerged, ii, iii.48.
6. *Cucullia barthae*, Boursin.
Larvae on *Scrophularia sphaerocarpa*, c. 2000 ft., iv-v.
7. *Amephana aurita*, J.
Coast and hills, iii, iv, v.
8. *Calocampa exsoleta*, L.
One larva found on 10.iv on low plants in a dried-up swamp at Dhikomo, near Kyrenia, but south of the chain, by Mr C. C. Mountfort.
9. *Dryobota furva*, Esp.
Larvae beaten in iv from *Quercus coccifera*, one mile west of Kyrenia.
10. *Antitype anceps*, Stgr.
(On a previous visit to Kyrenia, 1933) To sugar, 18.xii.
11. *Spudaea ruticilla*, Esp.
Larvae beaten in iv from *Quercus coccifera* in numbers, one mile west of Kyrenia.
12. *Autophila dilucida*, Hübner.
Coast and hills, v. (N.B.—Three species of this genus inhabit Cyprus. The other two, recorded by Rebel, but wrongly named by him, are mentioned in Part II.)
13. *Parastichtis monoglypha syriaca*, Ost.
One, on coast, 19.iv.
14. *Porphyrinia ragusana*, Freyer.
One, wooded hills, c. 750 ft., 22.iv.
15. *Catocala (Ephesia) eutychea*, Treitschke.
Larvae on *Quercus coccifera* (see above under *Cochliidiidae*) in iii, iv; adults in iv, v. (Accompanied here, on the coast, by *Catocala nymphagoga*, Esp., which, however, is also known from the South Cyprian Mountains.)
16. *Pericyma albidentaria*, Freyer.
One, on coast, 2.v.
17. *Phytometra circumscripta*, Freyer.
One, on coast, 25.iii.

GEOMETRIDAE.

18. *Pseudoterpna rectistrigaria*, **bona species** (nec. ab.).
Two distinct species of this genus inhabit Cyprus; Rebel (1939) named them both but treated them as one. The new species, apparently endemic, is obviously distinct without dissection (see Rebel's plate, fig. 12 of Pl. XV, *loc. cit. supr.*), but I show here

the difference in male genitalia (figs. A and B). During my three months in N. Cyprus I took only one *coronillaria*, Hb., over twenty *rectistrigaria*. They both inhabited wooded hillsides at 750-1000 ft., flying in iv, v.

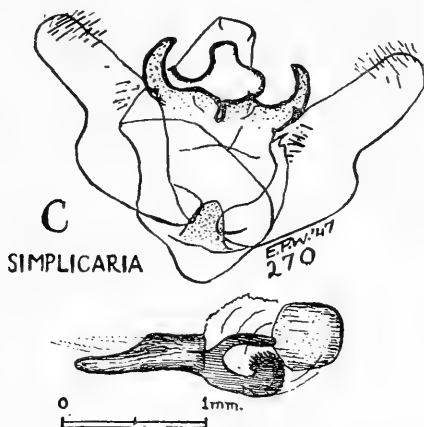
19. *Comibaena neriaria*, H.S.
Coast, v.
20. *Xenochlorodes olympiaria*, H.S.
Rebel has overlooked Prout's mention in Seitz, IV, Suppt. I took it in the Kyrenia vicinity on the coast and up to 1000 ft. in iv and v, but it was most numerous in mid iv in the hills.
21. *Scopula flaccidaria*, Z.
One only, 25.iii, coast.
22. *Sterrrha consanguinaria*, Led.
Coast and hills, v.
23. *Sterrrha circuitaria*, Hübn.
Coast and hills, v.
24. *Oulobophora externata*, H.S.
Scrub (*Pistacietum lentisci*) near coast, iii.
25. *Cidaria (Euphyia) permixtaria*, H.S.
Wooded hills, 750 ft. One only, 9.v.
26. *Cidaria (Euphyia) corollaria*, H.S.
Wooded hills, 750-1000 ft., iv, two only.
27. *Cidaria (Coenotephria) achromaria*, Lah.
Coast and hills, iii, iv, v.
28. *Eupithecia quercetica*, Prout.
Coast and hills, iii.
29. *Eupithecia dodonaeata*, Guen.
One male, at flowers of *Pistacia lentiscus*, coast, 6.iv, the genitalia agreeing perfectly with Pierce's figure of *dodonaeata*.
30. *Eupithecia (?) dubiosa*, Dietze.
One male, at flowers of *Pistacia lentiscus*, coast, 23.iii, the genitalia being close to but distinct from the preceding species, particularly in the aedeagus-cornuti. Probably a female adult belongs here also, which hatched on 6.iv.48 from Pug-larvae found on *Quercus coccifera*. Its genitalia are not like those shown by Pierce for *dodonaeata*; the forewing was unlike those of the male, being nearly unicolorous, dark, with a pale marginal line, i.e. very like *massiliata* but with a narrow linear, not round, cell-spot. There are thus three, perhaps four, univoltine vernal *Eupithecia* species, inhabiting the same habitat.
31. *Macaria aestimaria*, Hübn.
Two species of this genus inhabit Cyprus; both are named in Rebel (1939) but they are treated as one; it appears that only *syriacaria*, Stgr., has been taken in the island previously. (For the difference in biology between the two, see Wiltshire (1939), *Mitt. der Muench. Ent. Ges. J.*, XXIX, Heft 1, the third in my series of "Early Stages"). I found *aestimaria* rather rare in stream-beds near the coast in iii and iv; doubtless it occurs in its haunts later too.
32. *Rhoptria asperaria*, Hübn.
Coast and hills, iii, iv, v.

33. *Crocallis tusciaria*, Borkh.

(On a previous visit to Kyrenia, 1933) Coast, xii. Larvae in iv, v, on *Calycotome villosa*, *Genista sphacelata*, etc., hills.

34. *Hemerophila trypanaria*, sp. n.

♀, Antenna, serrate; thorax, rosy grey-brown and blackish; abdomen, blackish-brown. Forewing, grey-brown, paler at apex, rosier



Male genitalia, ventral open view, with aedeagus separated of:
Fig. C—*Dyscia simplicaria*, Rebel.

on median area, with blackish lines and shades; ante- and post-median lines run parallel and wide apart more or less as in *abruptaria* but latter is angled near apex as in *berenicidaria* Turati (see fig. 35, Pl. IV, *Atti. Soc. Ital. Sc. Naturali*, XLIII, for this species and the Italian form of *abruptaria*, etc.). Hindwing, grey-brown, marked with blackish lines and shades, paler at anal angle and termen; the post-median line is bent on v.5 as in some Asiatic species (e.g. *emaria*, Seitz, IV, pl. 20 b); this distinguishes it from all other European and N. African species of the genus. The coloration approaches that of *berenicidaria*, Tur., but the pale areas are not quite so white as in Turati's plate just referred to. Termen, a fine clear blackish wavy line, as in *berenicidaria*, not obsolete as in *abruptaria*. For further details of upperside see photo (Plate 3, Fig. 3). Underside, paler brownish-grey; the two cell-spots and post-median lines, indicated in grey-black; the post-median line is more strongly marked on the hindwing and is not angled as on upperside, reaching the costa at a different point. This line is dentate on the nervures on both wings.

Span: 36 mm.

Holotype: ♀, 7.v.47, c. 750 ft., Kyrenia Mountains, N. Cyprus (in coll. m.).

The name *trypanaria* is intended to recall the Trypanian Limestone of the N. Cyprian chain and of Mt. Trypao-Voun, at whose foot the type was taken.

35. *Aspilates ochrearia*, Rossi.

Coast, very common, iii and early iv.

36. *Mannia oppositaria syriaca*, Prout.

Larvae on lichens on cypress-trees at 2800 ft., v; hatched vi. (N.B.—The specimen was at first mistaken for *Tephronia sepiaria*

reported by Rebel from Cyprus, but the hind-tibiae make this impossible. The venation agrees with what Prout says in Seitz, IV, about *oppositaria*.)

PART II: OTHER NOTES ON CYPRIAN LEPIDOPTERA.

A. GENERAL NOTES.

Twice in Part I of this article reference was made to an earlier visit to Cyprus; this was a very short Christmas visit to Kyrenia in 1933. My second visit, when most of the discoveries and observations were made, was in spring 1947. An autumn visit would, I think, have produced further discoveries, though I consider I covered the optimum season at Kyrenia for insects as a whole.

The ecology of these insects can be quickly summarised, for my entomological work was done entirely in a single vicinity, that of Kyrenia on the North Coast. Country worked consisted of coastal plain and mountains to a maximum height of 3000 ft. All the localities visited were primarily one and the same biotope; present differences are due to secondary causes, principally cultivation, grazing and deforestation. A small radius only was worked, and all specimens could be labelled either "Kyrenia" or "Kyrenia Mountains." Very little of the primary scrub (*maquis*) is left intact on the plain; but where it survives, as on Mr Dray's small estate, the fauna is very much the same as on the hills, though certain species are missing. There is almost no perennial fresh water except the trickles almost immediately absorbed by irrigation; the one or two characteristic oasis moths and trees that I found were very local, clustering around small springs where shallow valleys debouched on the beach (e.g., *Leucania deserticola*, *Scopula flaccidaria*, *Macaria aestimaria* and *Phragmites*, *Typha*, and Tamarisk). This eco-fauna was scanty, so on the whole the fauna of the region was very homogeneous, viz., a fauna of the xerophilous Mediterranean scrub.¹

The additions to Rebel's list detailed in Part I do not alter the general zoogeographical picture as given by Rebel (1939), but merely necessitate certain changes of detail. The island fauna is evidently an impoverished East Mediterranean fauna: impoverished through isolation, just as the fauna of the British Isles has been, compared with that of the adjacent mainland. Cyprus is, however, richer in endemic species than the British Isles, perhaps because it was never extensively glaciated, and has been isolated longer.

The following species, regarded as endemics by Rebel, are now known to occur elsewhere too, and so should be deleted from the endemic list: *Agrotis hemispherica*, Hamps. (= *Euxoa temera*, see ²Boursin, XXIII, 1940); *Amathes pulvereae*, Hamps. (see ³Boursin, XXV, 1940); *Thaume-topoea wilkinsoni*, Tams, which also inhabits Syria; and perhaps others. On the other hand, the new species *Pseudoterpna rectistrigaria* and *Hemerophila trypanaria* (see Part I) can be added to the endemics; perhaps too the new and interesting *Cochlidion*, if distinct from *creticum*. Most of my additions to the Cyprian list are widespread Mediterranean or East Mediterranean species.

¹For further ecological and botanical details see Jens Holmboe (Bergen, 1914), "Studies on the Vegetation of Cyprus."

²Mitt. der Muench. Ent. Ges., 30, Heft 2, p. 540.

³Revue Francaise d'Entomologie. VII. Fasc. 1 (pp. 86-92, Plates III and IV).

The two families which Rebel thought absent from the island (*Lymantriidae*, *Cochliidiidae*) are now proved to be represented there (Part I). On the other hand it can be confirmed that the Burnets (genus *Zygaena*) are definitely and inexplicably absent. Nor did I discover any of Lederer's reputed Cyprian species which have never been retaken since Zach's visit in 1853.

I am tempted to embark on but must here refrain from lengthier zoogeographical discussions, which had better appear separately.

Rebel, in a list compiled from all parts of the island caught by numerous entomologists over many years, enumerates 286 different species of the families *Papilionidae* to *Zygaenidae*. For the same families, working only one district within a five-mile radius and up to a maximum height of 3000 ft., for three months only, I noted 154 (121 of Rebel's species plus the thirty-three enumerated in Part I). Many more *Agrotidae* would have certainly been noted had I worked the same district in autumn. The Northern Range and coastal plain is thus seen to be a rich district, considering its low elevation. Many species only known before from S.W. Cyprus occur there too. Certain species, however, are confined to the heights and woods of the mountains of the south-west; whether any of my additions are really confined to the north remains to be seen.

B. NOTES ON INDIVIDUAL SPECIES.

The numbers hereunder are those of Rebel's list:—

1. *P. machaon*.
Larvae noted on small roadside umbellifers in v (?*Pimpinella cretica*). Adults numerous.
2. *T. cerysi cypria*.
On coast at Dray's, commoner on mountains.
4. *P. brassicae*.
Hitherto unrecorded foodplant: *Capparis spinosa* (for details, see my note in *Ent. Rec.*, LIX, p. 94).
9. *A. cardamines phoenissa*.
Males very common, coast and hills, iii and iv.
21. *Hipparchia syriaca cypriaca*, Stgr. (see Plate, Fig. 4).
Common under *Ceratonia* trees in plain in v. The photo shows a remarkable assymmetrical variety, which Dr E. B. Ford considers a good example of homoeosis. The right wings are normally marked; they appear in the photo on the left, since the underside is illustrated. The underside of the left hindwing is strikingly abnormal; that of the left forewing is less abnormal, but the absence of the pale fascia near the tornus makes it assymmetrical too. On the upperside, the left hindwing is uniformly sooty-black, and lacks the diffuse pale fascia on the right hindwing. This uniform blackness can occur symmetrically in the Cyprus race. There is also a slight kink in the middle of the outer margin of the left forewing.
28. *P. roxelana*.
Fairly common in the plain, especially haunting small gullies with grassy tops, and also fond of tree foliage. For the Early stages, previously unknown, see my article in *Ent. Rec.*, LX, January 1948, and Plate V, Fig. 13, *id.*, LIX, October 1947.

42. *T. balcanicus*.
Foodplant: *Paliurus australis*. Not seen until late v. Larvae were noted too, with attendant ants milking them, thus confirming the observation made at Basra (*Ent. Rec.*, 56, pp. 111, 112, and Plate IV, Fig. g).
46. *Philotes astabene*, Hemming (= *clara*, Stgr. praeocc.).
(Rebel, as "*baton schiffermulleri*.") The genitalia show that the Cyprian *Philotes* is not *baton*. Hemming, in litt., told me that the Cyprian form was *Philotes vicrama*, Moore, subsp. *astabene*, Hemming, and that *schiffermulleri* is the European form of the same species *vicrama*. However, Dr W. Forster considers *clara* (i.e. *astabene*) distinct from *vicrama*. Who is right, I do not know. I took both forms (i.e. *schiffermulleri* and *astabene*) together, in iii and iv in the maquis, plain and hills, not very commonly; the male genitalia of the two forms were identical. They agreed with Dr Forster's photo of "*clara*" genitalia. At least I presume it is correct to say that I took the two forms named above: I certainly took two forms of male, one (in the majority) a dark blue, the other a pale glossy grey.
50. *Glaucopsyche paphos*, Chapman.
Is not, as Rebel says, a mountain species, but a maquis species. Where this scrub survives, as on Dray's, the butterfly occurs in the plain, right up to the edge of the sea. I associate it with *Genista sphacelata*, but was unable to prove this to be the foodplant.
54. *Pelopidas borbonica*, Boisd., subsp. *zelleri*, Led.
Is the right name for this skipper; a Tropical species with a Mediterranean race better known in Europe than the African.
67. *Thaumetopoea solitaria*.
I did not find this, nor any other of the species said by Lederer to have been taken by Zach. Zach's claim to have found larvae of *solitaria* on cypress makes me inclined to think that he has confused this and many other species and that all Lederer's unconfirmed records are doubtful, the specimens perhaps really coming from Syria.
- 79 & 80. *Amathes palaestinensis*, Kalchb. and *pulverea*, Hamps.
For the latter, see my remarks on endemics above under A. Whether the former occurs is at present doubtful; since Rebel did not examine the genitalia of the species he records it is impossible to say whether the second species of the group, after *pulverea*, in Cyprus is *xanthographa*, Schiff., or *palaestinensis*, Kalch.
84. Should be *Euxoa temera*, Hühn.
119. *Meganephria oxyacanthae* subsp. *benedictina*, Stgr.
Though doubtless closest to *benedictina*, the *Kyrenia* form, of which I took several examples in 1933 in xii at sugar, is smaller and paler than the mainland form. Some other name may therefore be necessary to designate the Cyprian race but I leave this open for the present.
127. *L. putrescens*.
Is not, as Rebel says, only West Mediterranean but East Mediterranean and, indeed, S.W. Persian! Its occurrence therefore in Cyprus need not be queried. Some larvae which I found but failed to rear were probably this species. I also took No. 126, *L. deserticola*, Bart., near *Kyrenia*.

187. The correct name for the species called by Rebel *Apopestes cataphanes ligaminosa* is, on the contrary, *Autophila anaphanes*, Boursin, subsp. *cyprica*, Boursin. I took one male in v at c. 750 ft. in fairly wooded hill country.
188. The correct name for the Cyprian species called by Rebel *Apopestes limbata* is *Autophila luxuriosa*, Zerny, subsp. *cyprogena*, Boursin. I took several in v at c. 750-1000 ft.
234. *Chesias rhegmatica*, Prout.
Four, at 750 ft., near the "Forest Hut," in iii. Possible food-plant:—*Calycotome villosa*.
257. *Boarmia correptaria*, Z.
Albers has shown (in *Zeit. d. Wiener Ent. Ver.*, 25, pp. 65 ff. 1940) that *correptaria* is specifically distinct from *perversaria*, Boisd. It is wrong therefore, as Rebel does, to make it a race thereof. The male genitalia of my Cyprian *correptaria* agree with Albers' figure of *correptaria* (1941, fig. 20, *Mitt. Muench. Ent. Ges.*, XXXI, H. 3, p. 978). At c. 750 ft. in iii and iv.
265. *Dyscia simplicaria*, Rebel (1939).
The holotype of this species, rightly diagnosed by Rebel as new, was a poor specimen unusually pale and small. It needs redescribing:—♂ antenna, bipectinate throughout. Forewing and hindwing of both sexes, when fresh, lilac-grey, with ochreous-brown tinted median field, and usually a strong but ill defined median shade from the inner margin to below the cell-spot. Ante-median and post-median fasciae, defined in black continuously near the costa, and by dots on nervures 1 and 2 in the former and on nervures 1-6 in the latter; the former is sometimes obsolete, though the costal marks are nearly always present, i.e. the black dots on nervures 1 and 2 are more often missing; the latter fascia is accompanied by a distal white shade, on both wings; the former fascia is quite obsolete on the hindwing. The cell-spot is clearly marked in blackish on both sides of both wings. The underside is lilac-grey, with the post-median fascia marked in black, on both wings. The male genitalia are illustrated (fig. C) since the species of this genus can only be accurately differentiated by a study of the tail-parts; the aedeagus of the Cyprian species is most singular. For the male genitalia of eight other *Dyscia* species, see Albers and Warnecke (1940), *Zeit. d. Wiener Ent. Ver.*, 25, pp. 118-122, and Warnecke (1940), *Mitt. der Muench. Ent. Ges.*, 30, Heft. 3, pp. 1047-51. For the early stages and phenology of *D. simplicaria*, see my photo and article in *Ent. Rec.*, LIX, Pl. V, Fig. 14, and LX, p. 3.
266. *S. ericetaria syriacaria*, Stgr.
Larvae on *Poterium spinosum* and *Polygonum* in the plain in iii, hatched in vi and vii; this early emergence is perhaps due to the cooler conditions of captivity, whereby the chrysalis exceptionally skips its usual aestivation; most of them died, however, and none emerged at the right season (autumn).
268. *Itame berytaria*, Stgr.
Larvae were seen both on *Calycotome* (as previously observed in Syria, see *Ent. Rec.*, XLVII, Pl. III, Figs. 22, 23) and *Genista sphacelata*.

COLOUR VARIATION IN PUPAE OF EUPHYDRYAS AURINIA.

By T. D. FEARNEHOUGH.

(Plate 4.)

An interesting instance of the effect of external conditions upon pupal colouration was observed during the rearing of a batch of larvae of the Marsh Fritillary. A number of *aurinia* larvae, mostly in the final stage of growth, were received from a Devonshire correspondent in the spring of this year. For some days the larvae were kept in a large closed tin and supplied at frequent intervals with fresh sprays of honeysuckle. Some of them fed very rapidly and soon pupated.

A closed tin is probably the most unsuitable receptacle possible for *aurinia* larvae, for they rarely thrive when denied a full quota of sunshine, so at the earliest opportunity better rearing conditions were arranged. A large plant pot was scrubbed clean and a bunch of honeysuckle sprays were arranged with their stems passing through the drainage hole and dipping into a vessel of water placed beneath. The top of the plant pot was covered with a piece of brussels net.

Since the weather was cold and cloudy during this period, extra comfort was provided for the larvae by suspending an 100-watt electric light bulb about eight inches above the net covering. This light was kept burning during the daytime and was turned off at night. The larvae obviously relished the light and radiated warmth, and gathered along the inner rim of the plant pot to bask under the artificial sun. They made frequent excursions on to the foodplant for feeding, and most of them were soon ready for pupation.

With few exceptions the larvae spun up on the netting cover and pupation invariably occurred when the light was burning. In quite a number of instances this fascinating performance was observed. After changing, the pupae were left undisturbed for a couple of days to thoroughly dry and harden. When these pupae were eventually removed from their positions a striking difference in general appearance, compared with the pupae which had changed in the closed tin, became apparent.

The two batches of pupae are illustrated on Plate IV, which shows all the healthy pupae obtained. The upper 13 examples formed in the closed tin, and the lower 15 specimens formed under the artificial lighting conditions. It will be seen that the latter pupae are generally paler with the markings comparatively small and tending towards obsolescence, whilst in the former specimens the general appearance is darker with the markings tending to enlargement. The bodies of the pale pupae were very free from yellow or orange markings, but the darker specimens were strongly marked with these colours.

Subsequently all the pupae depicted on the plate, with the exception of the central example in the top row, produced butterflies. This exception proved to be diseased in the manner only two familiar to rearers of this species.

Under the conditions of this accidental experiment it is not possible to draw many conclusions. The obvious variant is the light intensity; nil in one instance and high in the other. The radiation given out by a filament electric bulb is, however, complex, and it may well be that



T. D. Fearnough.

VARIATION IN PUPAE OF *E. AURINIA*.



the radiant heat, which is inherent in a light source of this type, has played a part in the pupal colouring effects.

It may be of further interest to relate that on the day following emergence two of the *aurinia* paired in a cage indoors. They remained together for 14 hours, and after parting the female remained quiescent for a further period of 24 hours. She then became very lively and spent several hours investigating the sprays of honeysuckle provided. After much fluttering and drumming on the leaves the female at last found a spot to her liking, and I was fortunate enough to see her deposit the first egg. About 300 eggs were deposited in four hours, and were arranged in two batches on opposite faces of the same leaf.

A CRITICAL EXAMINATION OF THE SECTION OF A "CHECK LIST OF BRITISH INSECTS" BY KLOET AND HINCKS, DEALING WITH THE "CHERMIDAE" OR PSYLLIDAE.

PART 1: ON THE USE OF THE FAMILY NAME CHERMIDAE, AND A DISCUSSION ON THE SUB-FAMILY LIVIINAE, LÖW.

By G. HESLOP-HARRISON, B.Sc., Ph.D., F.R.S.E.

It was with some considerable interest that I made my first acquaintance with the new Check List of British Insects, published by Kloet and Hincks in 1945. This interest was redoubled when I turned to the section dealing with the Homopterous family "*Chermidae*," or, as I have always preferred, the *Psyllidae*, and checked the contents with my own annotated lists.

One can understand the colossal task compiling such a work would be, and consider only with admiration the fact that it was finally completed in such a short time, even after the original manuscripts had been destroyed by enemy action in 1940. Even so, correct nomenclatorial terminology is the most useful tool of the taxonomist and systematist, as well as others for whom the check list is intended to serve. As the only "standard" Check List of British Insects available, inaccuracies of the sort that appear in the section now under discussion may completely distort the efforts of future workers. These may not merely defeat its original purpose but also do a great deal of irreparable harm if allowed to pass uncorrected.

My present remarks on the section dealing with the *Psyllidae* are very critical, but meant to be constructive, and I have gone to some considerable pains to detail the reasons for each correction I have made. The bibliography appended to the last section is not intended to be a complete bibliography to the *Psyllidae* as a whole but is complete in that I have included all the references I needed in this work.

The order of sequence for the sub-families follows that originally made when Löw first erected them in 1878. It is for this reason, therefore, that the typical genus and sub-family (i.e., *Psylla*, Geoffroy and the *Psyllinae*, Löw) appear fifth and third respectively.

On the Use of the Family Name, Chermidae, Kirkaldy.

Although I have been aware of Kirkaldy's 1904 innovation since my interest in the *Psyllidae* first developed, an examination of the facts

clearly revealed that it was impossible to accept the substitution of *Chermidae* for *Psyllidae* or *Psyllia* for *Psylla*. For clarity, and to indicate that my views are shared by one of the leading workers in the group, I have quoted directly from Tuthill's citation of the facts made in 1942.

"Much confusion has arisen as to the correct family name for this group of insects since Kirkaldy (1904) proposed the name *Chermidae* for *Psyllidae*, Latreille. Kirkaldy erroneously thought that Lamarck (1801) designated *ficus*, Linnaeus, as the type of the genus *Chermes*, L. Lamarck, however, merely cited it as an example of the genus, and this is not acceptable as a type designation. (Op. 79, Int. Comm. Zool. Nom.). Apparently because of this belief that *ficus* was the type of *Chermes*, Kirkaldy considered *Psylla*, Geoffroy, a synonym of *Chermes*. This left the *Psylla* of Latreille *et al* without a name, as *ficus* is not congeneric with the species of the latter. He subsequently (1905) proposed *Psyllia* for the orphaned group. The family would not have been *Chermidae* but *Psylliidae*, however, as the type of the family had been set as *Psylla*, Latreille, in 1807 by Latreille, the changing of the name of this genus would merely have changed the root of the family name, not transferred it to another genus. Since the type of *Chermes* is *abietis* (of the *Aphidoidea*), rather than *ficus*, Kirkaldy's contention is groundless."*

From the above facts, taken in conjunction with the use made of *Chermes* and the *Chermidae* by the compilers of the Check List, it would seem that they had no clear understanding of the implications of the change. Therein they have adopted part only of Kirkaldy's version in accepting *Chermidae* for the family name but have been unaware, or have ignored, even in synonymy, the key transference of *Psylla* to *Psyllia*, which made the whole thing necessary. *Chermes* is used as a substitute for *Psylla* and this is completely unacceptable, as the type understood by Kirkaldy was *ficus*, a species belonging to the archaic and very different genus *Homotoma*, Guer., of the *Prionocneminae*, Scott.† Obviously, therefore, the use thus made of *Chermes* invalidates the whole purpose behind Kirkaldy's efforts. Furthermore, assuming that Kirkaldy in his contention was right, *Chermes* could not now be accepted since his *Psyllia* would hold priority. As a rider to this it might as well be pointed out that nowhere in the literature on the *Psyllidae* has *Chermes* seriously contested with *Homotoma*, but it is usually included in the synonymy as "*=Psylla*, Geoffroy, *pro parte*: *=Homotoma*, Guerin, *pro parte*."

On the use of *Chermes* for *Psylla* or *Psyllia*, Tuthill has the following remarks to make:—

"E. P. Van Duzee, the chief proponent of the name *Chermidae*, whilst following Kirkaldy's names, based his arguments on different

*Very much earlier, Crawford (1914) rejected the change, and offered a very brief but similar explanation for his rejection in the introductory part of his treatment of the American representatives of the genus *Psylla*. I, myself, offered a very similar but detailed version of the same argument in an unpublished section of a Ph.D. thesis on the *Psyllidae* lodged in the Archives of Durham University in 1935.—G. Heslop-Harrison.

†Equal to, and pre-dating the better known sub-family name, the *Carsidarinae*, Crawford, by some 29 years.—G. Heslop-Harrison.

grounds. In an editorial note in the *Pan Pacific Entomologist* (7, 96) he states his case quite clearly, and in private communications states his views more completely. Briefly stated, his thesis is this: The *type* of any category *must* agree in all details with the published description. At first glance this position has a seemingly logical basis, and in the specific instance of *Chermes* versus *Psylla* his position seems sensible, but it is certainly not expedient, nor does it conform to the rules of nomenclature. To abandon the system of nomenclatorial rules established by the Zoological Congress and return to such a so-called 'logical' basis is, of course, unthinkable, and one shudders to think of the resulting confusion."

In discussing this situation with Captain Hemming in Dundee last Autumn, I was led to understand that these changes are still not authorised by the International Zoological Congress, and I hope bringing the facts to notice in this country means that they never will.

The only "British" worker on the group ever to have made use of any of these modifications in published work was Dr K. B. Lal, that, is, until the present Check List appeared. Even then, he only used *Psyllia* for *Psylla*, the family name in his major work still remaining unchanged. The use of *Psyllia* coupled with the *Psyllidae* and not *Psylliidae*, of course, lacks understanding of the situation. In discussing this matter in 1945 with Lal in India, I gathered that his use of *Psyllia* was the outcome of the incomplete discussion and representation of the situation as given by Brittain, Speyer, and Minkiewicz, all of whom used it in connection with their treatment of *Psylla mali*, Schmdbg., in works that were of the uttermost importance in reference to Lal's own work on the same species.

Naturally, it should be fairly clear that such changes as the substitution of *Chermes* for *Psylla*, and *Chermidae* for the family name are not merely confined to the *Psyllidae*, but have far-reaching effects in the related superfamily, the *Aphidoidea*; for its complete operation, substitutional names for the original family and genus would have to be found.

Whilst I am not prepared to extend my arguments into a group of insects in which I do not consider myself at the moment to be sufficiently specialised, *if* the only reason warranting these changes is based on the afore-mentioned annexation of *Chermes* and *Chermidae* for use in the *Psyllidae* on the false premise outlined above, then they, too, are quite unjustifiable, and they must revert to their original positions.

(To be Continued.)

May 27th,
Department of Agricultural Zoology and Entomology,
King's College, Newcastle-upon-Tyne.

AN APPEAL.

Since 1923 Monsieur Léon Lhomme and his collaborators have been engaged on the compilation of a Catalogue of the Lepidoptera of France and Belgium. The work has now reached Page 648, No. 3110 *Compso-*

lechia subsequella, Hb., and only two fascicules remain to be published to complete this monumental work, which is indispensable to all students of the Lepidoptera, even to those who may never travel beyond these islands.

But the cost of printing in France has suddenly increased more than double, so that it is financially impossible for the author and publisher, now over 80, to complete it without help. It is hard to believe that there are only eight subscribers in Great Britain, but such is the fact. Surely there are many more interested in this very valuable work and willing to subscribe to the Microlepidoptera part of the Catalogue, which at the present rate of exchange is still quite cheap.

The present cost of each fascicule of 16 pages is 50 francs, and all the remaining parts are ready for publication. Vol. I (Macros) can still be purchased from the author and publisher at 500 francs; Vol. II (fasc. 1, 2 and 3) at 400 francs; and fasc. 4 at 300 francs, from Monsieur Léon Lhomme, le Carriol, par Douelle, LOT. It is necessary to order the work or parts, and to get permission from the British authorities to send money abroad, which is readily granted on production of the invoice. The writer will be pleased to answer any enquiries.

WM. FASSNIDGE.

4 Bassett Crescent West, Southampton.

COLLECTING NOTES.

STRIKING ABERRATION OF COLIAS CROCEUS.—Regarding the *Colias croceus* of which you asked a description, I have had the insect photographed and am enclosing pictures of the upper and underside. I think that the one of the upperside is slightly overexposed as there is slightly more black scaling on the right forewing than is shown in the photo, and that on the left forewing is slightly heavier also. The ground colour is normal and the margins are very dark chocolate-brown, the streaked discal spot is black. The hindwings are normal on the upper-side. On the underside the hindwings have from the margin inwards a scaling of reddish-brown covering most of their surface.—K. H. BOBE, 19 Hengest Road, Lee, S.E.12. (Plate 5).

LEPIDOPTERA AT BICKENHALL, SOMERSET.—Many of the Lepidoptera have made a very early appearance this year, particularly the Butterflies, and the following notes may be of interest to others who keep "dates":—

Poecilocampa populi was still about on 4th January after unusual abundance during the mild weather at Christmas.

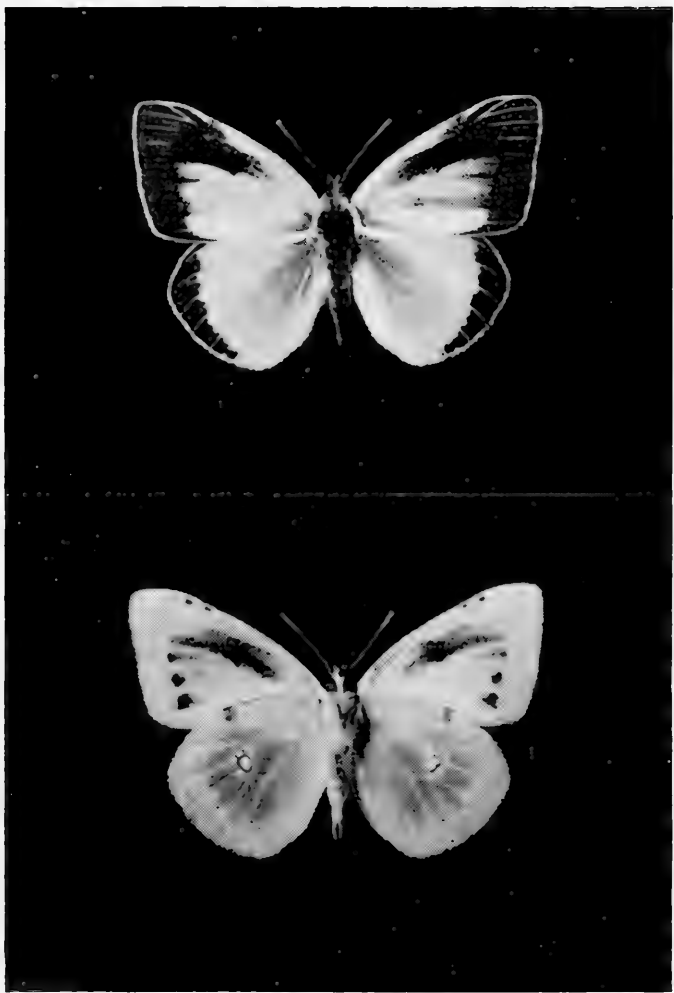
Theria rupicaprararia came to light 23rd January, but has been below the average in numbers.

Aglais urticae first seen on 2nd February and has been unusually common since.

Phigalia pilosaria. A solitary specimen on 28th February.

Gonepteryx rhamni. First seen 1st March. Numbers about average.

Orthosia stabilis, *Earophila badiata*, *Erannis defoliaria*. All appeared on 3rd March.



K. H. Bobe.

COLIAS CROCEUS, Geof. Ab.

Orthosia gothica on 8th March, but subsequently infrequent. (*O. miniosa* was not seen at all, although the larvae are now in evidence).

Diurnea fagella. First seen 10th March, about ten days early.

Polygonia c-album. 11th March, a very early date, and very common since.

Selenia bilunaria also appeared on 11th March, and has turned up almost daily since. Last year I saw nothing of the first brood.

Nymphalis io was not seen until 12th March, and only at irregular intervals. It would be interesting to hear if others have noticed any comparative scarcity.

Pieris rapae. 13th March, not common.

Pararge aegeria was first seen on 23rd March, a very early date, and has been abundant as usual.

Macroglossum stellatarum. A solitary specimen on 26th March.

Euchloë cardamines was late, not appearing until 11th April.

Cerura vinula. A pair "in cop," 13th April. I have not previously seen them before May.

Pieris napi. 15th April, and since in its usual abundance.

Opisthograptis luteolata. Very early, 18th April.

Cyenia mendica. A single female on 20th April. Surely a very early date.

Leptidia sinapis was about a fortnight early, appearing on 25th April, and has been much commoner than usual.

Dira megera was not seen until 26th April.

Dasychira pudibunda. One female on 3rd May.

Celastrina argiolus first seen 4th May. Rare as always.

Cucullia verbasci. Also on 4th May.

Ancylis badiana. Not seen until 5th May. About three weeks late, but possibly overlooked.

Lycaena phlaeas. 6th May, but numbers in excess of the normal, after the abundance of last Autumn.

Pieris brassicae first seen 6th May, but only intermittently since.

Xylomages sconsPICILLARIS turned up on 7th May, and again on 8th May.

This is a very early date, but as the moth is so easily overlooked, it is difficult to compare the dates with previous years.

Vanessa atalanta. A solitary butterfly on a "sugar patch" on 8th May.

Coenonympha pamphilus. After a first appearance on 8th May, has been commoner than I have ever known it.

Erynnis tages, *Panemera tenebrata*, *Xanthorhoë montanata*. All on 9th May.

Pyrausta purpuralis not seen until 10th May, about two weeks late.

Apatele psi, *Argyroproce lacunana*, *Argyroproce pruniana*. Were all early comers on 13th May.

Spilosoma lubricipeda. One newly emerged on 15th May.

Abrostola tripartita, *Calothysanis amata*. Both occurred singly, and unduly early on 18th May.

Dilina tiliæ. One "drying out" on an Elm trunk on 21st May, and *Sphinx ligustri* at rest on a post 22nd May. Both these Hawks considerably before their usual time.

Ochlodes venata was much too soon, 20th May.

—A. H. TURNER, Forest Drove, Bickenhall, Hatch Beauchamp, Taunton, Somerset, 23.v.48.

CURRENT NOTES.

THE *Ent. Tidskrift*, Sweden, contains a large and detailed study of the *Microdota*-Group of the *Staphylinidae* (Col.) by Lars Brundin. There are 13 plates attached. Another section of the Faunal List is published, and there are two Obituary Notices with photos: Dr G. Horoath, 1847-1937, Buda Pesth; and Chas. Walter Grossmann, 1884-1948, Basle.

IN *Bull. Ann. Ent. Soc. Belg.*, III-IV, 1948, R. Mayne lists the four species of *Bruchus* (Col.), well known in Belgium as attacking food, and adds ten additional species. He gives a few notes on each.

THE Spanish journal *Eos*, Vol. XXIV, Pt. 1, March 1948, pp. 124, and 16 plates, gives a record of a deal of useful and interesting work. R. Ageno discusses the species of the Phycitid genus *Epischnia*, more particularly those in the Andorrian Mountains in Spain, illustrated by a map, numerous text figures and two plates including figures of the twelve species concerned. The same author considers the geographical distribution and the morphology of *Issoria lathonia* in Spain, with a map, text figures, and an admirable plate of ten full-sized figures from twelve separate areas (in. \bar{b} and w.). A coloured plate of five upper and five undersides is a fine addition to their number. Perhaps the most important article is the 50 pages of Notes on the Coccidae of Spain with three plates and many figures in the text, by J. G.-M. Ortega.

THE *Canadian Entomologist*, July-August 1947, just issued, contains several papers useful to the general entomologist. An Annotated List of the Wasps of Alberta by Strickland; Additional Notes on the Coleoptera taken in Essex County and Southern Ontario, by Hicks; Notes on the Life-histories of three Floridian Butterflies, by Chermock, with a plate devoted to the pupae.

REVIEW.

A WHILE ago we reviewed two small volumes of a projected series on Gall Midges. We now have the third volume, just published. This deals with the Gall Midges of Fruit, by H. F. Barnes, of the famous institution at Rothamsted, Herts. That the work is an adequate treatment of this section and may be relied upon is the fact that A. M. Massee of E. Malling writes the foreword. In a work of this kind it is essential that more than a simple Contents should be given. Such we have. The List of Illustrations is unusually annotated. There is a very full List of Crops which are attacked by these small and minute pests, each crop with the names of its own species. This occupies five pages. The matter is well paragraphed under headings which easily ensure access to the trend of the facts displayed. The figures given are most effective in suggesting the actual infestation. There are 22 pages of References to the Literature with annotation in some cases. The Index to the List of Midges is admirably displayed and will save a vast amount of time. It gives Genus, Species, and Popular Name, if any. This is followed by a Plant Index. And finally the General Index gives all indications such as "care over grafts to prevent midge attack," "effect of rainfall on the descent of larvae to the soil." In fact, the lay-out of the book is marvellous.

EXCHANGES.

- Subscribers may have Lists of Duplicates and Desiderata inserted free of charge. They should be sent to Mr HY. J. TURNER, "Latemar," West Drive, Cheam.
- Wanted**—American Hesperidiidae, especially from Costa Rica, West Indies, the Guyanas, Guatemala, Honduras, Nicaragua, Venezuela, Colombia and Bolivia. Write K. J. Hayward, Instituto Miguel Lillo, Calle Miguel Lillo 205, Tucuman, Republica Argentina.
- Desiderata**—Dipterous parasites bred from Lepidopterous larvae or pupae, or from any other animal.—H. Audcent, Selwood House, Hill Road, Clevedon, Somerset.
- Wanted**—I need specimens of *Lycaena* (*Heodes*) *phlaeas* from all parts of the world, particularly Scandinavia, Russia, Siberia, Madeira, Canaries, N. Africa, Middle East counties, and E. Africa; also varieties from British Isles or elsewhere. I will purchase these, or offer in exchange good vars. of British Lepidoptera or many sorts of foreign and exotic Lepidoptera.—P. Stutter Smith, 21 Melville Hall, Holly Road, Edgbaston, Birmingham, 16.
- Wanted** for cash or exchange many species of ova, larvae or pupae, especially local forms and *A. grossulariata* from different localities, also Seitz Vol. 1 and Supplements to Vols. 1-4. Offers also, Tutt's *Practical Hints*, Parts 1 and 2, Buckler's larvae, Vols. 1-6, and Tutt's *British Noctua*, Vols. 2, 3 and 4.—Dr J. N. Pickard, F.R.S.E., 36 Storeys Way, Cambridge.
- Wanted**—Various monthly parts of *Entomologist's Record* for 1914, 1915, 1916, 1917, 1919, and 1920. Please report any odd monthly parts (in wrappers as issued) prior to these years.—P. B. M. Allan, 4 Windhill, Bishop's Stortford, Herts.
- Wanted** urgently for genetical purposes, pupae of *Selenia tetralunaria*.—Dr H. B. D. Kettlewell, Homefield, Cranleigh, Surrey.
- Wanted**—Various Books on Lepidoptera. Please send lists and price. Also wanted, Live Exotic and English Lepidopterous Material for cash or exchange for similar material or Set English Imagines.—J. K. Goody, "Weldon," 26 Carr Wood Road, Bramhall, Ches.
- Sale or Exchange**—R.E.S. *Trans.* and *Proceed.*; bound, 1911 to 1916, 1918 to 1919; unbound, 1921 to 1923, 1925; also 1917 and 1924 less part 5. New Series—*Trans.*, Vols. 1 and 2, Vol. 3, part 1. *Proceed.*, Vol. 1 and Vol. 2, part 3. *Trans. Suffolk Naturalist Society*, Vol. 3 and Vol. 4, part 1. **Wanted**, bound or unbound, *Entomologist*, Vols. 2 and 3, 1926 and 1928, 1941 and 1942. *Ent. Mont. Mag.*, 1922, 1924-5, 1933-41. List on application.—F. W. Smith, Boreland of Southwick, by Dumfries.
- Wanted**, for experimental purposes, a few pupae of *Endromis versicolora*, purchase or exchange.—R. W. Parfitt, 1 Dunsdon Avenue, Guildford, Surrey.
- Wanted**—Bristol board suitable for mounting Coleoptera. Also, Puton, A., 1878, "Synopsis des Hémiptères-Hétéroptères de France. Badonnel, A., 1943, *Faune de France*, No. 42, Psocoptères.—H. G. Stokes, 12 Roman Road, Salisbury, Wilts.
- Wanted for Cash**—Tutt's *British Butterflies*, 1896: *Transactions and Proceedings Royal Ent. Soc. Ldn.* (must be almost if not quite complete).—Lionel Higgins, Linkwood, Woking.
- For Disposal**—*Entomologist's Record*, Vols. 55 (1943) to 59 (1947) in parts, all in good condition. For cash, or in exchange for any of Dr Imms' Textbooks of Entomology including the latest.—Alan M. MacLaurin, Oldhall House, Kilmacolm, Renfrewshire
- Wanted**—For the British Museum larval collection, larvae of Chrysomelid beetles, alive or preserved. Liberal exchange if required.—Dr S. Maulik, British Museum (Natural History), Cromwell Road, London, S.W.7.
- Wanted**—Ova. Preserved or Living Larvae and Pupae of English and Foreign Sphingidae, especially *atrapos*.—R. M. Rickard, Coningsby, Lincoln.
- For Disposal**—Barbut (J.), *The Genera Insectorum of Linnaeus*, 1781 (including 2 Plain and 20 Coloured Plates); *The Genera Vermium of Linnaeus*, 1783 (including 11 Coloured Plates); *The Genus Vermium of Linnaeus*, Part 2, 1788 (including 1 Plain and 13 Coloured Plates); the three works in 1 volume. What offers? I would exchange the above for Haworth, *Lepidoptera Britannica*, 1803-1827.—J. M. Chalmers-Hunt, 70 Chestnut Avenue, West Wickham, Kent.
- Wanted to Purchase**—African Section of Seitz' *Macrolepidoptera of the World*, both Butterfly and Moth Volumes, either bound or in parts.—D. G. Sevastopulo, c/o Ralli Brothers Ltd., P.O. Private Bag, Mombasa, Kenya Colony.

MEETINGS OF SOCIETIES.

Royal Entomological Society of London, 41 Queen's Gate, S.W.7: September 1st, October 6th, at 5.30 p.m. *South London Entomological and Natural History Society*, c/o Royal Society, Burlington House, Piccadilly, W.1; 2nd and 4th Wednesdays; 6.0 for 6.30. *London Natural History Society*: Tuesdays, 6.30 p.m., at London School of Hygiene or Art-Workers' Guild Hall. Syllabus of Meetings from General Secretary, H. A. Toombs, Brit. Mus. (Nat. Hist.), Cromwell Road, S.W.7. *Birmingham Natural History and Philosophical Society—Entomological Section*: Last Friday in month, at 7 p.m., at the Birmingham Museum and Art Gallery. Particulars from the Hon. Secretary, G. B. Manly, 72 Tenbury Road, King's Heath, Birmingham, 14.

TO OUR READERS.

Short Collecting Notes and Current Notes. Please, Early.—Eds.

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Articles that require ILLUSTRATIONS are inserted on condition that the AUTHOR DEFRAYS THE COST of the illustrations.

Communications received:—Thomas Greer, Fergus J. O'Rourke, O. Querci, H. Donisthorpe, Malcolm Burr, Surg.-Lt. Comm. H. M. Darlow, D. G. Sevastopulo, D. Fearnough, R. J. R. Levett, E. C. S. Blathwayt, E. P. Wiltshire, A. E. Wright.

All Communications should be addressed to the Acting Editor, HY. J. TURNER, "Latemar," 25 West Drive, Cheam.

If you collect *CORIDON*, *BELLARGUS*, *ICARUS*, *ARGUS*, *MINIMUS*, *AGESTIS* or *PHLAEAS*, you can be interested for life in their British aberrations by obtaining

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ENTOMOLOGIST'S RECORD AND JOURNAL OF VARIATION

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CONTENTS.

ARE ANTS ATTRACTED BY BRIGHT COLOURS, <i>Malcolm Burr, D.Sc., F.R.E.S.</i>	95
BUTTERFLY COLLECTING IN BALCOMBE AND EAST SUSSEX IN 1947, <i>R. J. R. Levett</i>	95
A DAY'S COLLECTING AT ATHI RIVER, KENYA COLONY, <i>D. G. Sevastopulo, F.R.E.S.</i>	97
COLLECTING NOTES: <i>Heodes phlaeas</i> aberration, <i>T. D. Fearnough</i> ; <i>Cucullia absinthii</i> in the Midlands, <i>G. B. Manly</i> ; <i>Argynnis lathonia</i> in Swanage, <i>Leonard Tatchell</i> ; Early Appearance of <i>Limenitis camilla</i> , <i>C. B. Antram</i> ; Abundance and Scarcity of <i>Rhingia campestris</i> , <i>Mg., B. R. Laurence</i> ; <i>Cyrtidae</i> (Dipt.) in Bedfordshire, <i>Id.</i>	100
CURRENT NOTES	101
OBITUARY	102

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ARE ANTS ATTRACTED BY BRIGHT COLOURS?

By MALCOLM BURR, D.Sc., F.R.E.S.

While sitting in a garden on the shores of the Gulf of Ismit on 17th July my attention was attracted by a glistening red object travelling across the gravel. To my surprise, I found it was an ant carrying a tiny piece of crimson foil that had evidently been wrapped round a chocolate.

There were bigger pieces lying about, all silvery on one side, but either golden or crimson on the other, and all with glistening lustre. I tore them into small pieces and scattered them, with the result that in a few minutes the path was decorated by a mass of brilliant gold and crimson spots, all moving irregularly in approximately the same direction. I traced them down to a stone wall, but, unfortunately, was unable to follow the matter up further.

It would be interesting to know whether the ants were attracted by the bright colours, or, perhaps, by the aroma of chocolate which no doubt clung to the fragments.

[The ants Dr Burr sent are *Aphaenogaster aestaceopilosa* Lucas subsp. *semipolita* Nylander. These ants collect seeds; but also other objects which they afterwards reject. Emery records that they carry home petals of flowers. In my paper on the ants and myrmecophiles of Sicily [*Ent. Record* 38: 161-65; 39: 6-9 (1927)], where this subspecies is abundant, I recorded that on one occasion I saw several workers carrying a fair-sized bean.—HORACE DONISTHORPE.]

BUTTERFLY COLLECTING IN BALCOMBE AND EAST SUSSEX IN 1947.

By R. J. R. LEVETT.

During last season I made observations at various places in East Sussex, as follows:—Within two-mile radius of Balcombe, in the Eastbourne district, at Beachy Head, Cuckmere Valley from Alfriston to the sea, Hastings, Downs above Clayton, Chailey Common, Three Bridges, and Abbots Wood near Hailsham, and in Hove.

Apart from butterflies, *Macroglossum stellatarum* was very common everywhere; about fifty were seen in Hove or at home, ranging from one on 28.iv to one on 13.xi; they were more abundant after mid-August. One was seen feeding at petunias on Dieppe Town railway station on 3.ix. A fresh specimen of *Sphinx convolvuli* was found near Alfriston on 27.ix. On 20.vii a ♀ of *Sirex gigas* (a pine-boring sawfly) was caught in Balcombe.

MIGRANT BUTTERFLIES.—The first *Vanessa atalanta* was seen at Arlington on 21.vi. In late July it was common in mid-Sussex, and odd specimens were seen almost daily until mid-October. *Vanessa cardui* was fairly plentiful throughout the late summer: the first were two seen on 2.vi, in Balcombe, the last on 26.ix. The *Pierinae*—*brassicae*, *rapae*, and *napi*—had their numbers swelled by immigration to extreme abundance in August and September. Often they resembled white clouds over the allotments.

Of course the Clouded Yellows made the most prolific migration of 1947—probably their best since 1877. I saw a total of over 150 *croceus*; they were seen all along the Sussex coast from Chichester to Hastings, and inland over the Downs as far as Ashdown Forest. A few specimens of lemon-yellow colour (none netted) were either those of *C. hyale*, or the var. *helice* of *croceus*.

RESIDENT BUTTERFLIES.—The season was rather varied as regards the residents—some few were abundant, some merely plentiful, while several were rather scarce. Outside my home area *Argynnis aglaia* was plentiful on the South Downs, around Clayton and Alfriston, on 29.vii and 3.viii. *Aricia agestis* emerged in numbers; two ♀♀ were captured on 29.vii, and in early August many emerged in the Cuckmere Valley. *Eumenis semele* was not so well out; a ♂ and a ♀, both just emerged, were taken near the Long Man of Wilmington on 3.viii, and others were seen, mostly in early August. I found three specimens of *Hesperia comma*, an elusive and rather local species, at the top of High-and-Over Hill near Seaford, during a passing inspection on 16.viii. All three were ♂♂, two worn, and the other, which I retained, quite fresh. Rather curiously, although *A. agestis* is usually plentiful on the Downs, it is far scarcer on the thickly-wooded Sussex-Surrey borders; I have only two specimens from here, both taken at Balcombe soon after VE-day, May 1945. *Polyommatus (Lysandra) coridon* is often common on the Sussex Downs in August, and 1947 was no exception. Very large numbers were out everywhere on the section of the Downs between the Cuckmere Valley and Beachy Head. None were seen near Clayton Mills on 29.vii, although *icarus*, *phlaeas*, *agestis*, *sylvestris*, and the first four migratory *croceus* were all seen there. *L. coridon* first appeared with several fresh ♂♂ on Beachy Head on 2.viii. The following day was hot and sunny, and many more appeared. In favoured spots a dozen or more fresh ♂♂ could be observed at once. However, ♀♀ were fewer and less inclined to fly, the proportion being about one ♀ in 10 of several hundred specimens. The emergence seemed to be in full swing, although probably the predominance of ♂♂ indicates at this date that the appearance of *coridon* was about two weeks late. However, by mid-August the balance of sexes had evened up considerably. A small fresh ♂ *coridon* of var. *arcuata* was among several taken near Alfriston on 3.viii. *Satyrus (Melanargia) galathea* was noticeably scarce in East Sussex—a worn specimen was seen on 4.viii, but I have yet to see any in the Forest Ridges district. Abbots Wood near Hailsham was cut down early in the war to provide charcoal for explosives. Three, four years old bushes have since grown. When I visited it on 21.vi last, no *Melitea athalia* were found, although several *Argynnis selene* were captured and examined to avoid overlooking *athalia*.

At home, several *Aglais urticae* tried to “aestivate” in the manner of tropical butterflies. In late August during the heat-wave specimens repeatedly flew in, and hid in dark corners of the house. It is a disputable point whether this was true aestivation or premature hibernation; I am inclined to think the former occurred. *Argynnis paphia* was just as common as usual in the oak-woods, late in the summer. *Celastrina argiolus* was scarce compared with 1946—only a few

odd specimens were seen in June and July. *Limenitis camilla* is well established in local oak-woods and appeared plentifully in July. *Apatura iris* has not been observed here, although it may well occur. *Heodes phlaeas* was the commonest of all to me in 1947. There were probably three, if not four, generations and it was common until late October, the last being three fresh ♀♀ on 3.xi. On 6.x a specimen of *L. phlaeas* was taken, being a small, fresh, but damaged ♂ of var. *obsoleta*, Tutt, similar to Dr Ford's figure in *Butterflies* (1945), pl. 29, fig. 3. On 24.vii a fine ♀, var. *arete*, Müller, of *Aphantopus hyperantus* was taken in Balcombe. Two specimens of *Maniola tithonus* taken are notable: a small worn ♀ (Chailey Common) on 10.viii, having two extra black spots on each forewing; and a large freshly-emerged ♀ (Balcombe) on 15.viii, similarly marked. Such aberration is referred to by Dr Ford (*l.c.* p. 222). *Thecla quercus* was common round oak-woods in Balcombe in late July, but only ♀♀ were captured, all being freshly emerged then. On 29.vii a fresh ♀ *quercus* was netted on top of the Downs near Clayton. I mistook it for a ♀ Blue, since it was actually rather an unusual treeless spot for it; with this species the ♀♀ are often found feeding on honey-dew on the lower leaves of oak-trees, whereas the ♂♂ fly mostly at the tops of the trees.

Of the other species, those not already mentioned which are resident in our district are as follows:—*Anthocharis cardamines*, *Argynnis euphrosyne*, *A. selene*, and *A. paphia*, *Callophrys rubi*, *Coenonympha pamphilus*, *Erynnis tages*, *Gonepteryx rhamni*, *Maniola jurtina*, *Nymphalis io*, *Ochlodes venata*, *Pararge aegeria* and *P. megera*, *Polygonia c-album*, *Polyommatus icarus*, *Pyrgus malvae*, and *Thymelicus sylvestris*.—R. J. R. Levett, Netheroak, Stockcroft Road, Balcombe, Sussex, 13.vii.48.

A DAY'S COLLECTING AT ATHI RIVER, KENYA COLONY—

15.VIII.48.

By D. G. SEVASTOPULO, F.R.E.S.

Readers of the *Entomologist's Record* may be interested in an account of the entomological results of a field meeting of the East African Natural History Society held at Athi River, some seventeen miles south-east of Nairobi, on the 15th August 1948.

A total of sixteen attended this meeting, but entomologists were well in the minority—two of us versus fourteen bird-watchers. With the exception of the only Satyrid seen the whole day, a specimen of *Neocaenyra gregorii*, Btlr., which was caught by my colleague, our experiences were the same and I have not differentiated between our captures.

The river itself, at the time we visited it, was only a small stream flowing through a dry, grassy plain dotted with thorn bushes, a narrow belt on either side of the stream itself being greener and with more varied vegetation. Part of the river flows through the Nairobi National Park, one of the Kenya Game Reserves, and our morning activities were confined to this section.

We arrived at the meeting place shortly before eleven, and, on getting out of our cars, were met by numbers of an orange-tipped, yellow

butterfly and a white species. The former turned out to be *Teracolus auxo* Lucas, *incretus*, Btlr., and proved to be about the commonest species of the day; the whites proved to belong to three species, although very similar on the wing, *Glycesthes severina*, Cr., *G. gidica*, Cr., and *Anapheis aurota*, F. (*Belenois mesentina*, Cr.), and of these *G. severina* was almost as common as *T. auxo*. A few specimens of *Teracolus aurigenus*, Btlr., were also flying here, a species that proved rather local, probably being confined to the neighbourhood of its foodplant, a species of *Salvadora*, all the other members of the genus seen belonging to the section feeding on *Capparis*.

We crossed the stream by a muddy ford, at the edges of which numbers of *Danaus chrysippus*, L., f. *dorippus*, Klug., were resting (only one specimen of the nomino-typical form was met with during the day). With the *chrysippus*, a single male of its mimic (in the female sex only) *Hypolimnas misippus*, L., was seen.

Walking along the side of the stream, we disturbed numbers of the above mentioned Pierids as well as specimens of *Teracolus eupompe*, Klug., *T. antigone*, Bsd., *T. achine*, Cr., and a fourth species of the white, orange-tipped section with the underside of the hindwings beautifully tinted with pink, I think a dry form of *T. omphale*, Godt. In addition to the above, *Pinacopteryx orbona*, Cr., *vidua*, Btlr., was very common, *Eurema (Terias) brigitta*, Cr., and *E. senegalensis*, Bsd., less so, whilst we saw, but failed to catch, several examples of *Eronia cleodora*, Hbn.

Pierines were by far the commonest species, *D. chrysippus* sailed about singly and, over the more open, grassy spaces, we saw a few *Acraea encedon*, L., *encedon*. Most of these belonged to the form mimicking *dorippus*, viz., *daira*, Godm. & Salv., but a few belonged to the nomino-typical form with the black and white apex, and a very few to the yellowish-white form *lycoides*, le Doux, previously known as *lycia*, F., now considered a separate West African species, which does not extend to East Africa.

This is very difficult country in which to collect, almost all the bushes are armed either with recurved thorns or with paired divergent spines, often an inch or more in length, and the smaller plants all seem to have seeds enclosed in burrs or some other adhesive type of pod; even the grass-seeds are awned and stick to your net. As a result it is almost impossible to touch any plant with the net without getting it caught up or covered with burrs of some sort or other.

A conspicuous feature of this part of the walk were numbers of a whitish Geometer, which swarmed in the grass and rested with its wings held over its back like a butterfly. Lycaenids were scarce, and, keeping to the shelter of the herbage, difficult to catch; I caught a few specimens of *Symtarucus telicanus*, Lang, a single example of an *Anthene*, and one or two *Cosmolyce boeticus*, L. A few examples of a *Zizeeria* were seen, but, as none were caught, it cannot be certain whether they were *lysimon*, Hbn., or *gaika*, Trim.

After walking for about an hour, we crossed over the stream and walked back the other side; the country here was more open and grassy, the orange-tipped, white *Teracolus* spp. being commoner here than they had been before, as also was *A. encedon*. Two skippers turned up at this point, a single specimen of a still unidentified *Hesperia* and a single

Sarangesa lugens, Rog. On the way back, several of the party saw a small crocodile basking on the surface of the stream and we walked into a large flock of Guinea Fowl, which flew off squawking loudly.

Almost back to the starting point, we came across two large thorn bushes covered with pale mauve balls of bloom and swarming with butterflies. Unfortunately they were so spiney that it was impossible to catch anything off the flowers, and we had to poke wanted specimens with a stick and hope they would fly out far enough to be caught. Here were congregated no less than five species of *Precis*, *P. hierta*, L. (*oenone*, L.), *cebreane*, Trim.; *P. clelia*, Cr.; *P. orithya*, L., *madagascariensis*, Guer., *P. octavia*, Cr., and *P. taveta*, Rog.; *cebreane* was by far the commonest, the underside varying from a deep leaden-grey to yellowish-brown, *clelia* was not very common, and the other three species were represented by a single specimen each, those of *octavia* and *taveta* both being of the wet season form. In addition to the *Precis*, these thorn bushes were attractive to *Byblia ilithyia*, Drury, of which there were a fair number, *A. encedon* and *Acraea braesia*, Godm., *braesia*. This last species was represented by two specimens and I was particularly struck by the very Zygaenid-like appearance they presented in flight.

After lunch we moved off a little way out of the game reserve and followed the stream the other way. The country here was far more open and the Pierids comparatively fewer in numbers, whilst *A. encedon* was more common. A single specimen of the usually very abundant *Acraea terpsichore*, L., was caught flying over the grass in the open.

Very few moths were seen or kicked out of the herbage, a few examples of a Noctuid, *Euclidisema* sp., and a few green *Hemitheids*.

A single third-instar larva of *D. chrysippus* was found and surprised me by rolling up and falling off its foodplant as soon as it (the foodplant) was touched. This is most unusual behaviour for a *chrysippus* larva, and quite different from its habits in India, where I have collected it in hundreds. This difference in habit may, I think, be due to the difference in the foodplants in the two countries. Both belong to the Asclepiadaceae but are very different in appearance. The Indian foodplants, *Calotropis* spp., are large bushy plants with conspicuous silvery leaves; they are evidently distasteful and even goats leave them alone, and, being so noticeable, are most unlikely to be eaten accidentally. The foodplant in East Africa belongs to the genus *Asclepias* and is very different in appearance, it has long narrow green leaves and is rather inconspicuous, and quite likely to escape notice when growing amongst coarse grass. It might, I think, be quite easily eaten accidentally by grazing animals, with fatal results to any larva that remained clinging to it.

The only other larva found was a green Geometer, feeding on Castor (*Ricinus communis*, L.), which has since produced a black-spotted greenish-yellow imago, which has not been determined for certain but which is superficially not unlike *Ptochophyle peristoecha*, Prout.

The *Capparis* bushes were all badly eaten, but neither larvae nor pupae were found, and the new shoots all bore large batches of the orange ova of, probably, *A. aurota*.

The most noteworthy feature of the day's collecting was the tremendous preponderance of the Pieridae, both as species and individuals. Similar country in India would almost certainly have produced large

numbers of the Satyrid genera *Ypthima* and *Melanitis*, and also the Lycaenid *Zizeeria*, but here Lycaenids were scarce and Satyrids almost non-existent. The country was not suitable for Papilionids or Nymphalids, so that the complete absence of the former and the comparative scarcity of the latter were not surprising.

Nairobi, 4.ix.48.

COLLECTING NOTES.

HEODES PHLAEAS, ABERRATION.—I captured on 22nd August at Loxley near Sheffield a fresh male of the Small Copper, which had the left fore-wing coloured as in ab. *schmidtii*, but with some coppery shading at the base. The other three wings were normal.—T. D. FEARNEHOUGH, 25 Ramsey Road, Sheffield.

CUCULLIA ABSINTHII IN THE MIDLANDS.—At the meeting of our local Society on 30th July, Mr L. T. Evans exhibited a specimen of this moth, taken whilst hovering over Valerian in his garden.

Another was netted by me on 2nd August, also at Valerian, in my own garden.

Unfortunately we lost our Midland records during the blitz, but it would appear that this insect is rare in the Midlands. They were taken in widely different localities, one north the other south of the city.—G. B. MANLY, 72 Tenbury Road, Birmingham, 14.

ARGYNNIS LATHONIA IN SWANAGE.—On Sunday last, 25th July, at 12.55, just outside my cottage in the rough uncultivated land going East to Peveril Ledges I observed a specimen of *A. lathonia* flying low over the herbage in leisurely way. I returned for my net, and after ten minutes waiting I saw it again but there was no chance to secure it. Anyhow it was a delight to see this species on the wing. Is this to be a *lathonia* year?—LEONARD TATCHELL, 27th July 1948.

ABUNDANCE AND SCARCITY OF RHINGIA CAMPESTRIS, MG. (DIPT., SYRPHIDAE).—I wonder if others have had a similar experience of this species. The cold, prolonged winter of 1947, followed by a very hot summer, provided a contrast of climatic conditions with the mild winter and rather wet summer of 1948. In 1947, from 23rd May until 25th June, *Rhingia campestris* was excessively common at Fancott, Bedfordshire, occurring not only in the woods, but visiting *Lamium*, *Taraxacum*, *Geranium*, etc., in pastures and meadowland and resting on *Urtica* along the roadside. The numbers apparently began to decrease early in July. So far this year, however, I have seen only *one specimen* of this species (1 ♀, 15.v.48) at Fancott, and none at all during occasional visits elsewhere. The following table summarises the number of visits (1946-48) to Fancott (given in brackets), and the number of visits on which *R. campestris* was seen.

YEAR	MONTH.				
	iv	v	vi	vii	viii
1946	2(3)	4(5)	6(7)	3(3)	2(2)
			(17.iv.46→13.viii.46)		
1947	0(1)	3(3)	4(4)	3(5)	0(1)
			(3.v.47→27.vii.47)		
1948	0(6)	1(2)	0(2)	0(3)	—
			(1 ♀, 15.v.48)		

(April this year was warm and sunny and other Syrphids were as abundant as usual.)

On 3rd July 1947 a number of ♀ ♀ were found hovering around fresh dung on pastureland and ovipositing on the undersides of neighbouring grass leaves. One leaf had two batches of eggs (70 and approximately 180 eggs), and another similar batches of 19 and 16 eggs. These latter all hatched out by 5th July, so the fertility of the adults (in this case, at least) in 1947 was normal. It may be significant that the larvae all died on the 5th, apparently from desiccation (although they were enclosed in a tube with some grass), and conditions may have been too dry locally for this species, which would account for its scarcity this year.

Mr J. E. Collin and Mr H. W. Andrews have told me that *Rhingia* was exceptionally common around Newmarket and Salisbury in 1947, but I believe numbers of this species were normal in the West Country. —B. R. LAURENCE, 31 Sherwood Road, Luton, Beds.

EARLY APPEARANCE OF LIMENITIS CAMILLA.—I think I ought to record the very early appearance of the White Admiral here in the New Forest. I took two males on the 14th June and saw two more.—CHAS. B. ANTRAM.

CYRTIDAE (DIPT.) IN BEDFORDSHIRE.—Records of this family are relatively scarce, so it is perhaps worth noting the occurrence of two species in Bedfordshire in 1948. On 1st August a male *Oncodes gibbosus*, L., was swept from herbage (*Ranunculus flammula*, L., *Glyceria aquatica*, Wahl., etc.) in a stream at Totternhoe. The locality is in a marshy field at the foot of the chalk scarp. On 4th August two male *Acrocera globulus*, Panz., were caught hovering around the writer's head in one of the dry coombes in the Lower Chalk at Pegsdon, near Barton. One of these males was covered with pollen.—B. R. LAURENCE, 31 Sherwood Road, Luton, Beds.

CURRENT NOTES.

THE recent publication of the S. African Entomological Society contains an account of Assembly and subsequent mating of the large and beautiful Saturniid moth, *Gyananisa maia* by J. Sneyd Taylor, M.A., F.R.E.S., who is now Vice-President of the Society. There is a good figure of the ♀ moth, which was $5\frac{1}{2}$ inches in expanse; the male is two-thirds the size.

THE Amateur Entomologists' Society has issued a most useful book to all lovers of Nature, "A Directory of Natural History Societies," which is inclusive of all the long existing Societies as well as the smaller private Societies, those held in connection with schools, and those where a few are gathered together for a special object of investigation. This may be taken as a Report of the work which is in progress to train the mind by observation and thought. In fact it points to a tremendous amount of informal education in progress all over the country through these small centres continuous year after year with relays of new members.

PART 2, Vol. IX, *Trans. Soc. Brit. Ent.*, recently to hand contains a long memoir on the "Aquatic Coleoptera of North Wales" by E. S. Brown, B.A., F.R.E.S.

A RECENT publication in the *Proceedings of the U.S. National Museum* is entitled "Status of the Pyraustid Moths of the Genus *Leucinodes* in the New World," with descriptions of new genera and species. This is illustrated by only one figure of an imago and a lot of outlines useless to the ordinary general entomologist.

PART 3, Vol. 69, of *Ent. Tidskrift* (Sweden), contains a description with figures of three new forms of *Saturnia* (*Eudia*) *pavonia* by Felix Bryk. The names of these forms are ab. *postrosea*, ab. *travenfelti*, and ab. *lappmarchica*, all three females. This Heft also contained much interesting matter anticipating the International Congress to be held in Stockholm in August.

THE attractive little Belgian Journal *Lambillionea* is this year begun to appear more regularly, a number every two months. The Jan.-Feb. 1-2 contains a long and illustrated article by J. Tlety, entitled "The English Rhopalocerous Fauna and its Distribution on the Continent in the Regions nearest to England." There are three maps. 1, The Zones studied; 2, The Temperature in January; 3, The Yearly Rainfall and Average in various of the Areas of England and the Continental Area chosen. After this general consideration has been explored, each species is dealt with shortly.

March-April, 3-4, contains an article by J. Picard, on the Hesperidae found in the Department due Gard. with details of the species found in the area. Notes on the additions to the fauna of Belgium are kept well up to date as of old in both this number as also in May-June, 5-6 number. This number contains the completion of the article on the Hesperidae.—Hy. J. T.

OBITUARY.

It is with great regret that we have learned the news of the death from cancer of Nikolai Yakovlevlievich Kuznetsov.

The veteran lepidopterist, who celebrated the jubilee of his scientific activity four years ago, was one of the last survivors of that fine old school of Russian entomologists of the older generation. As most of his work was in Russian—generally with an abstract in English—and usually concerned with the rich fauna of the vast Union, it was not familiar to the body of British entomologists. His original article on the origin of the Arctic fauna, by which he really meant principally the Lepidoptera of Northern Siberia, appeared in English in condensed form in *The Field* in October and November 1938 and an abstract of another, on Lepidoptera preserved in amber, will be offered to our readers at a later date.

He left several unfinished works, including one on fossil insects, a bereaved Academy of Science, which recently held a mourning meeting in his memory, and many friends who had the fortune to know that charming and accomplished entomologist,—M. B.

EXCHANGES.

- Subscribers may have Lists of Duplicates and Desiderata inserted free of charge. They should be sent to Mr H. J. TURNER, "Latemar," West Drive, Cheam.
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Royal Entomological Society of London, 41 Queen's Gate, S.W.7: September 1st, October 6th, at 5.30 p.m. *South London Entomological and Natural History Society*, c/o Royal Society, Burlington House, Piccadilly, W.1; 2nd and 4th Wednesdays; 6.0 for 6.30. *London Natural History Society*: Tuesdays, 6.30 p.m., at London School of Hygiene or Art-Workers' Guild Hall. Syllabus of Meetings from General Secretary, H. A. Toombs, Brit. Mus. (Nat. Hist.), Cromwell Road, S.W.7. *Birmingham Natural History and Philosophical Society—Entomological Section*: Last Friday in month, at 7 p.m., at the Birmingham Museum and Art Gallery. Particulars from the Hon. Secretary, G. B. Manly, 72 Tenbury Road, King's Heath, Birmingham, 14.

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CONTENTS.

FIELD NOTES FROM ANATOLIA. IV. ANKARA, <i>Malcolm Burr, D.Sc., F.R.E.S.</i>	103
NOTES ON MIGRANTS AND LIGHT IN NORTH SOMERSET DURING 1947, <i>J. F. Bird, F.R.E.S.</i>	105
COLLECTING NOTES: <i>Rhingia campestris</i> , Mg., and <i>Syrphus balteatus</i> , De Geer, <i>H. W. Andrews</i> ; <i>Cucullia absinthii</i> in the Midlands, <i>G. B. Manly</i> ; A Rare Dipteron, <i>S. Wakely</i> ; Belated Larvae of the Poplar Hawk Moth, <i>W. J. Finnigan</i> ; Scarcity of <i>Rhingia campestris</i> , Mg., <i>Bernard Verd-court</i>	107
CURRENT NOTES	108

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HARVARD
UNIVERSITYFIELD NOTES FROM ANATOLIA
IV. ANKARA.

By MALCOLM BURR, D.Sc., F.R.E.S.

The plateau of central Anatolia is a world apart with a fascinating fauna. I had had a good view of the birds in 1946, but that was in April, far too early for Orthoptera, and I was hoping to make the acquaintance of the steppe-plateau fauna on this occasion. Peter Davis had reported that the place was full of life early in July, but by the time I reached Ankara August was well on and I was afraid I should be too late.

It was August 11th when I arrived, on the eve of the *bayram*, or holiday with which our Turkish friends celebrate the close of the long fast of Ramazan. I was lucky enough to get a day in the field with Teyfik Karabagh, the keen young Turkish orthopterist who has already done good work, before he was caught up in the celebrations, which last three days. With some other Turkish friends he took me on an excursion to a place called *Hadji Kadin Deresi*, that is Lady Pilgrim Dell, one of those narrow brooks which provide the only green stripes in this arid, treeless region.

Davis had reported that this pleasant little locality with a romantic name had been full of life a month earlier and that the open ground was teeming with little mammals like stoats. These, of course, were *susliks*, *Citellus*, which I had seen in swarms by the roadside in April, but by 13th August, the day of our excursion, they had all gone into aestivation. That was a pity, as these jolly little chaps, which afford the "basic industry" for the foxes and birds of prey, add a touch of liveliness to the scene.

As we walked down into the dell, I picked up some of that beautiful grasshopper *Oedipoda aurea* with golden wings, that I had first seen on Boz Dagħ; it has been recorded, I believe, only or at least principally from limestone, but the country here consists of metamorphic schists.

In the dell itself there is a fairly rich flora, of willows, almond, hazel, oak and other bushes, while higher ground was covered with vines, mulberries, walnut trees and no doubt other fruit. At once I saw several butterflies on the wing, a number of blues, but none very distinctive, nothing recalling the glories of *L. bellargus* and *L. coridon*; there was a big Satyrid, probably *S. briseis*, flitting ghost-like among the trees.

There were not many Orthoptera. A couple of females of *Bucephaloptera bucephala*, that I had found abundant round Salonika and common enough by the Bosphorus and a single male *Incertana incerta*, which seems to have an eastern distribution, for I do not think it extends far west of the Bosphorus, where it is the commonest Decticid, and I took it in the south. Also a single *Rhacocleis turcicus*, a regular Anatolian species. Of other Tettigonids, I saw only plenty of the ubiquitous Mediterranean *Tylopsis lilifolia*, both forms, the green and the marbled. The only cricket spotted was a single female of *Oecanthus pellucens*.

A little clump of *Saponaria officinalis* produced *Forficula hincksii*, Burr. I was glad of this, as it verified my identification of a fragment that Davis had found among his flower presses and so fixes its range from the south coast of Anatolia, where Professor Kosswig discovered it, at least as far north as Ankara. The clump was full of them, but I did not find them anywhere else, nor any other earwigs except a female *F. auricularia* in the car when we reached home.

Of grasshoppers, there were some *Acrotylus* and *Oedipoda coerulescens*, with some unusually pale and small males, and *Oed. miniata*, Pall. (= *gratiosa*, Serv.), which seemed to be of a rosier pink than the Bosphorus specimens. There was what I take to be *Chorthippus biguttulus*, L., and a small specimen that I could not name. No Mantids nor Blattids were seen.

Of other insects, not much moving. The nearly dry streamlet was the home of some delicate Agrionids and a couple of pale yellowish *Sympetrum*. *Myrmecaleo* seemed surprisingly strong on the wing. *Rhynchota* seemed more numerous than on the Bosphorus, but all had a homely look.

On August 14th I returned to the dell alone. As I walked across the desiccated open ground, dotted with dry, blue *Eryngium*, it all seemed lifeless, but on reaching the edge of the dell there were clusters of almond, oak, *Osyris*, frequented by the usual dull *Lycaenas*, with heaths that looked to me like *C. pamphilus*, browns that looked like *H. jurtina* and *S. semele* and *S. briseis*. In the dell itself I worked hard, but saw only two Dectichids, a *Platycleis* and *B. bucephala*. Of grasshoppers, a few *Ch. biguttulus*, I think, and *Dociostaurus brevicollis*, Ev. A single *Oed. aurea*. I was surprised that there was no sign of *Calliptamus*, or *Pezotettix*; this was disappointing, as here the Mediterranean *P. giornae* is replaced by another species, *anatolicus*. Not a sign of a dragonfly nor of a *Myrmecaleo* that day, but a single female *Tett. viridissima*, not yet hard, without a trace of green on it. A single male *Mantis religiosa*, fresh and green. Beneath a big stone found a "Bosphorus beetle," *Procrustes gigas*. The purple monster was doing his duty, for he was half-buried inside a snail, *Helix aspersa*. Higher up there was a little water in the streamlet, with a mud turtle, and a single land tortoise near by, *Testudo graeca*. The former is interesting, which I did not know at the time and so did not take a specimen; in Turkey there are two species, *Clemmys caspica*, which I used to know in Russian Azerbaidjan, and *Cl. rivulata*. The ranges of the two species overlap in the neighbourhood of Ankara and they are found together in the local lakes. Also found a single larva of *Ameles* sp., the little East Mediterranean Mantid with conical eyes that haunts arid hillsides, and a single *Pezotettix anatolicus*.

Another dell, watered by a sluggish stream with milky water, seemed attractive, so I went there the next day, but could not find any trace of life except a few frogs. The cause of the milkiness is probably an outlet of some paper mill. There was not the sign of a Neuropteran or dragonfly and sweeping in the thin herbage along the bank produced only a few *Rhynchota* and *Coleoptera*. Disappointed, I climbed out on to the arid hillside. There was a little herbage, *Eryngium*, spurge, almond shrubs, and an occasional brown butterfly. The sky was cloudy

and the breeze was strong. Later in the afternoon a few *Orthoptera* put in an appearance, a few *Oed. coerulescens*, *aurea* and *miniata*, *Caliptamus tenuicercis*, Tarb., and a larva of *Empusa*. Then back to the market gardens alongside the brook. Here on the mud was a *Tridactylus*.

A farewell visit to Hadji Kadin Deresi provided the same things. On this occasion it was rewarded by a single *Platecleis*, I think *intermedia*. This scarcity of individuals seems strange, as in Macedonia I used to catch them by the dozen.

On the 17th I spent the afternoon on another arid hillside, on the flanks of the brook Kayash, a typical gallery-formation, with gardens and plantations, with good-sized villages that profit by the unwonted moisture and verdure.

The hillside was very stony and steep, with small clumps of spurge. *Eryngium*, *Acantholimum*, with rich dark green patches of the sprawling *Prosopis*. Here there seemed to be hardly any living thing, but hard work and patience were rewarded by the capture of two, out of half-a-dozen seen, *Rhacocleis turcicus*, Uv., and *Charora pentagrammica*, I. Bol., both typical Anatolian species, the latter an Oedipodid. Uvarov found this interesting species common on the higher slopes of the volcanic hills south-west of Ankara. This was unfamiliar to me, a small, grey grasshopper, with smoky wings and a black stigma on the costal margin, an unusual feature; also a very small *Omocestus*, a *Chorthippus* resembling *bicolor*, one or two *Oedipoda aurea* and *coerulescens*, *Notastaurus anatolicus*, Kr., and a few *Cal. tenuicercis*, which seemed unusually small. Two hours' hard work on that sun-baked hillside yielded 28 specimens only, representing half-a-dozen species.

On the 18th I walked over the hills by the village of Keciören, but found nothing at all moving till I came to a brooklet with a garden with the usual fruit trees and maize patches. Here in a tiny patch of bog a single *Tridactylus*, which made me wonder how he got there; the patch was only 8 ft. across and there was not another of them to be seen. Here I worked hard for an hour or so, and produced *Ch. bicolor*, *Oed. aurea*, *Oed. coerulescens*, *Call. tenuicercis* and the *Tridactylus*. I saw a wasp, *Spheg*, I think, hawking around the seepages of water, where it settled as though for a drink, but I did not see it catch anything. No dragonflies, but a single *Myrmicaleo*. The only butterfly other than the usual blues and browns was a small *Leucophasia*. During my visit to Ankara I did not see a single Vanessid, *Argynnis* or *Papilio*, except in the town gardens, where the Zinnias attracted *P. podalirius* and *A. pandora*.

The following day I left for Zonguldak.

(To be continued.)

NOTES ON MIGRANTS AND LIGHT IN NORTH SOMERSET DURING 1947.

By J. F. BIRD, F.R.E.S.

Of the migrant lepidoptera observed in North Somerset during 1947. *Colias croceus* was, naturally, the most conspicuous. The first one seen by us was, I think, a male, on 29th May, curiously enough travelling

rapidly in a south-westerly direction; and our last record was one seen passing over our garden on 5th November. They appeared singly throughout June, but by August had become so plentiful that it was not unusual to see them in the streets and visiting the flowers in the gardens of the town. At first the females were rarely observed, but became more and more prominent as the season advanced. The var. *helice* was practically, if not quite, absent in the Clevedon area, and only two doubtful specimens were noticed. In contrast, we found this variety commonly between 11th and 24th October during two visits to Teignmouth, in South Devon, where the white *pallida* form, and specimens approaching it, were predominant.

So far as I have been able to ascertain, *Rhodometra sacraria* has not been recorded in Somerset prior to 1947, when at least five were obtained in various parts of the county, including one male taken by my son (H.W.B.) near Clevedon on 27th September. A search for more in our district proved unavailing.

Three specimens of *Laphygma exigua* were attracted into the house by light between 31st July and 1st September. Also attracted by the same means was an abundance of *Nycterosea obstipata*, often several in a night, from 31st May until 1st September, the greatest number during August. Having heard of the capture of others at Weston-super-Mare, it surprised me to read in the *Entomologist* (lxxxii, 114) that Capt. Dannreuther credits Somerset with only five specimens during the year.

Phlyctaenia ferrugalis was abundant as usual at light between 2nd June until 7th November; but *Nomophila noctuella*, though very common, had a comparatively short season from 13th May to 3rd September. Our earliest and latest records for the latter at Clevedon are 25.iii.40 and 23.x.46.

Light was most uncertain, but we did have a few very attractive nights; for instance, on 14th July, when we recorded 80 species of "macros" and 10 of Pyrales. Amongst our captures at light during the year were: *Eilema complana*; *E. griseola*, var. *flava*; *Comacla senex*, mostly males, arrived in numbers on 14th July; *Phragmatobia fuliginosa*, numerous ♂s; *Arctia caja*, several, including two contrasting varieties, one with the chocolate markings much reduced, and the other exactly the reverse; *Craniophora ligustri*, two, one a beautiful specimen of ab. *olivacea*; *Coenobia rufa*, a few; *Pyrrhia umbra*; *Arenostola fluxa*, two ♀s; *A. pygmina*, several of both sexes; *Parastichtis ypsilon*; *Cucullia umbratica*, three, the first we have recorded at light; *Xylena vetusta*, one ♂; *Graptolitha ornitopus*; *Bombycia viminalis*; *Leucania pudorina*, one ♀, also obtained commonly at dusk on a marshy moor [When arranging these in the cabinet I was interested to find that the Somerset race is, on the whole, noticeably larger than a series taken by my father at Wicken, thirty-eight years ago.]; *Hadena conspersa*; *H. chenopodii*; *Heliophobus sordidus*; *Ceramica pisi*; *Ophiura pastinum*, several, also plentiful in suitable localities at dusk, going to the bloom of *Eupatorium* and rushes; *Plusia festucae*, two; *Leucoma salicis*, one ♂, not common in Somerset; *Lymantria monacha*, a few; *Sterrhia trigeminata*; *Scopula immutata*; *Geometra papilionaria*, three ♂s; *Gymnoscelis pumilata*, abundant, and including one ab. *rufifasciata*;

Eupithecia valerianata; *E. linariata*, 2nd gen. on 9th August; *E. castigata*, one or two melanic specimens; *E. isogrammaria*; *E. sobrinata*; *E. nanata*, one, probably strayed from some distant heath; *Horisme vitalbata*, a few of each generation; *Philereme transversata*; *Perizoma bifasciata* and *P. alchemillata*, a few of each; *Discoloxia blomeri*; *Cleora rhomboidaria*, one ab. *rebeli* ♂, on 17th June, and a small pair, ♂ and ♀, not quite so black, on 4th October, presumably individuals of a 2nd gen.; *Bapta bimaculata*, a freshly-emerged specimen of a partial 2nd gen., on 9th August; *Ourapteryx sambucaria*, ab. *cuspidaria*, a small example of a 2nd gen., on 12th October; *Crocallis elingvaria*, a lovely variety with the median band on the forewings reduced to an extremely narrow V; *Deilephila elpenor*; *Sphinx ligustri*, several; *Smerinthus ocellatus*; *Notodonta dromedarius*; *Pheosia gnoma*, both generations; *P. tremula*; *Drepana cultraria*, 2nd gen.; *D. binaria*, a few during July; *Gastropacha quercifolia*, two ♂s; and *Zeuzera pyrina*, one ♂. Amongst the Pyraloidea attracted were: *Salebria fusca*; *Homoeosoma hinaevella*; several of the Crambidae, the best being *Crambus margaritellus*, taken by my son (H.W.B.) on 14th July, an addition to the Somerset list, and which, according to Barrett, should not occur south of Warwickshire, although Meyrick gives Devon; *Acentropus niveus*, a good number of both sexes on 27th and 29th July, when an unsuccessful attempt was made to induce some of the ♀s to oviposit on plants in an aquarium; *Schoenobius forficellus*, swarmed, especially on the night of 17th June, the great majority being ♀s, varying considerably in size and shading; *Nymphula stagnata*; *Perinephela lancealis*; *Phlyctaenia fuscalis*; *Mecyna asinalis*; and *Platyptilia punctidactyla*.

In conclusion, I would like to mention the capture of *Eupithecia albipunctata*, ab. *angelicata* and *Semiothisa liturata*, ab. *nigrofulvata*, both netted by my son (H.W.B.) at dusk near Clevedon. He also found, much to his surprise, a larva of *Notodonta dromedarius* on 31st October, feeding on sallow, a remarkable foodplant for the species. This belated larva spun up on 5th November, and the imago duly emerged on 2nd April 1948.

Redclyffe, Walton St Mary, Clevedon, Somerset.

COLLECTING NOTES.

RHINGIA CAMPESTRIS, MG., AND SYRPHUS BALTEATUS, DE GEER.—I was interested to read Mr B. R. Laurence's note in the September issue of this magazine. I can confirm his statement as to the excessive abundance of *R. campestris* round about Salisbury in 1947. Here (at Breamore, Fordingbridge), where I came in the latter half of May this year, I saw hardly any until about mid-July. Thence onwards it was in evidence now and again, but it did not occur nearly as commonly as it used to in my old collecting grounds in the N. Kent district.

Its place as a common Syrphid was, however, taken by *Syrphus balteatus*. This species is, of course, always common, but I have never seen it in so great numbers as it was this summer. It swarmed on Umbelliferae, and was a nuisance hovering round trees and shrubs. Its numbers kept up well into September, but in the last week or so it has practically disappeared.—H. W. ANDREWS.

CUCULLIA ABSINTHII IN THE MIDLANDS.—Since reporting, in July, the capture of several specimens of *Cucullia absinthii* in the Midlands, it has been found that the larvae are very common in and around Birmingham. Almost every patch of *Artemisia absinthium*, in widely separated areas, has yielded a large number of larvae. Has the insect been previously overlooked or has it only lately extended its range to the Midlands?—G. B. MANLY, 72 Tenbury Road, King's Heath, Birmingham, 14, 9th September 1948.

A RARE DIPTERON.—I took a fine specimen of *Volucella zonaria*, Poda, here at Herne Hill on 3rd July, and I have another taken this year in the Isle of Wight.—S. WAKELY, 38 Stradella Road, Herne Hill, London, S.E.24.

BELATED LARVAE OF THE POPLAR HAWK MOTH.—At Bookham on 5th September I came across several larvae of *L. populi*, so I suppose there has been a second brood of this moth in this somewhat poor and remarkable year.—W. J. FINNIGAN, 87 Wickham Avenue, Cheam.

SCARCITY OF RHINGIA CAMPESTRIS, MG. (DIPT., SYRPHIDAE).—Further to Mr Laurence's note on this subject (*antea*, p. 100) I too have noticed the scarcity of *Rhingia* this year. I do not make a point of collecting flies but nevertheless do notice the commoner and less critical species. During 1947 it was quite common in Bedfordshire, but I particularly noticed its abundance on the Norfolk Broads, at Acle Dyke, during August 1946. Every flower of *Calystegia sepium* (L.), R. Br., seemed to contain an individual of this species. The only two specimens which I have seen this year at all are:—1, Litany Path, Totternhoe, 1st August; and 1, Wavendon Heath, 4th September (both Bedfordshire).—BERNARD VERDCOURT, 86 Claremont Road, Luton, Bedfordshire.

CURRENT NOTES.

THE current issue of the *Trans. of the Soc. for Brit. Entom.*, vol. lx, pt. 3, contains a paper (with an extremely long title) on the Aquatic Hemiptera-Heteroptera, the Water Bugs, found in the Scottish Highlands and the East and South of England. This is one of those useful series of records of collecting, so useful for other naturalists, as a basis of their own field work as well as for those dealing with the Group as a whole.

THE completion of the *Bol. Entom. Venezolana*, vol. vi (1947), recently issued, contains articles on Diptera, Mallophaga, Hymenoptera, Coleoptera, and the description of a new species of flea. There are 161 pages and 2 plates and numerous text figures. The matter is in English.

OCCASIONALLY we like to call attention to the Journal of the Society which does so much "to keep the road clear" for us lovers of the wild, viz., *The Journal of the Commons, Open Spaces, and Footpaths Pre-*

ervation Society. All who can should "join in the fray" and induce their Society to join as well. The current number gives a section of the Ordnance Survey Map around Ormskirk, a Report on the New Forest Committee, 1947, and other matters in hand.

THE two Entomological Magazines of Sweden, *Opuscula Entomologica* and *Ent. Tidskrift*, both come regularly. Some of the articles are in English and some have a Summary of an article in English. Vol. xiii, pt. 2, 1948, of the former has an article, "A Few Words on Entomology in the University of Lund" (English). The next paper is on Diptera, in German. A memoir on a new Cockroach from W. Africa is in German. The next article is in English, a biological discussion. Another article in English follows, dealing with a new species of the Odonata, with notes on the group *Anisogomphus*. The shorter contributions are mainly in English, with an odd note or two in English and German.—HY. J. T.

IN looking through many magazines from many countries it makes one sorry to see so much space filled with scratchy illustrations of new species very often with no indication of what the insect is like. This "slipshod" work is of practically no use except to one who is a good worker with his microscope, and where there is no other definite description the species should be labelled "Genitalia Species." The Nature lover can then bye-pass it without further struggle and waste of valuable time.—HY. J. T.

THE *Ent. News* of America, April No., recently issued, contains the Obituary of the late T. D. A. Cockerell, of Colorado, who was, I believe, a member of the S. London Ent. and N.H. Socy. many years ago. His health compelled him to seek a dry climate and he took a post in the young University of a city in the extreme S. West corner of the United States. His study was the Hymenoptera, and his interest was in his garden. Two years ago he wrote me renewing our acquaintance, enclosing a portrait of himself and his wife. He was at the time arranging to go to Honduras in 1947. He was then 80 years of age.

The Pan Pacific Entomologist, vol. xxiv (1948), No. 2, contains articles on a large number of obscure, little known or new insects, without indication of the Orders to which they belong. There is an obituary of S. F. Light, whose whole life was spent in entomological work and surroundings, and a memoir on the swarming of a species of Termite.

THE indefatigable Capt. Dannreuther has sent us a proof of a comprehensive Report he is presenting to the S.E.U.S.S. of the results of the mass of records assembled on the migration of the Lepidoptera during the past 20 years. These statistics show definitely that of the real migrants of which these islands or some districts of them may be included in "their area of distribution," we can always expect to see *V. cardui*, *V. atalanta* and *C. croceus* of the Butterflies; *A. atropos*,

H. convolvuli and *M. stellatarum* of the Hawkmoths; and *Plusia gamma* of the Noctuidae. Of the Micros, *N. noctuella* is the only regularly reported migrant.

The remainder of the species listed may be considered as casual visitors rarely recorded in double figure numbers and not expected each year and more rarely a recognizable mass as in the case of the regular migrants. *A. atropos* is almost invariably a migrant to the N.E. of England from the Lowlands of the Continent.

The species of Lepidoptera listed as migratory other than those mentioned by me "as casuals" are:—

BUTTERFLIES.—*D. archippus* (*plexippus*), *N. antiopa*, *A. lathonia*, *L. boeticus*, *C. hyale* and *P. daphidice*.

HAWKMOths.—*C. euphorbiae*, *C. galii* and *C. livornica*.

NOCTUIDAE.—*L. unipuncta*, *L. vitellina* (? may be an irregular migrant), *L. albipuncta*, *L. l-album*, *C. ambigua*, *L. exigua*, *H. armigera*, *H. peltigera* and *C. fraxini*.

ETC.—*U. pulchella*, *R. sacraia*, *N. obstipata* and *H. ferruginella*.

WE expected more matter to come in for October. First a series of Current Notes from others (signed, of course). Many incidents affecting entomology happen of which we have no knowledge. Then I did hope to obtain a short report of the Meeting in Sweden of the International Congress of Entomology. The difficulty of sending money abroad prevented subscribing and obtaining the publication to be issued in due course. I believe my colleague, Mr T. B. Fletcher, would have gone if it had not been for the repeated attacks of illness he suffered.

IN preparing Notes for the Noctuid species I am giving accounts of in the *Ent. Record* I found this reference in Treit., *Schmett.*, Vol. V (3) of *Syngrapha* (*Plusia*) *interrogationis*: "Donovan. *Nat. Hist.*, II, plt. lxx, f. 1." Of course, it should be Donovan, but worse than that. The insect referred to had the name *interrogationa* and was diagnosed and described as a Tortrix, taken in Kent, and very rare. The figure, of which I have two copies, is not a *Plusia* in appearance. Can anyone inform us what had become of this species. It appears in no List or Catalogue, Staudinger, Barrett, Meyrick, Haworth, Duponchel and many other books and records I have. The date of Donovan is 1793. The reference was taken from Treit., *Schmett.*, V (3) (1829).

OUR contributor, D. G. Sevastopulo, who sent us the attractive article published in the September number, is now stationed by his firm in British East Africa. He will probably be centred in Nairobi, to be accessible for Kenya, Uganda and Tanganyika, where his work will lie. He was able to name all his captures by the fine collection of the native Rhopalocera in the Museum at Nairobi, a fine collection assembled under the supervision of the many representatives of the Oxford University in the early years of the present century

EXCHANGES.

Subscribers may have Lists of Duplicates and Desiderata inserted free of charge. They should be sent to Mr HY. J. TURNER, "Latemar," West Drive, Cheam.

Wanted—*A. vestilialis* from all parts of the British coasts except south: also *R. simulans* and *S. ravida* (obscura). Cash or exchange.—A. H. Sperring, *Stindon, Fifth Avenue, Warblington, Havant, Hants.*

Desiderata—Dipterous parasites bred from Lepidopterous larvae or pupae, or from any other animal.—H. Audcent, *Selwood House, Hill Road, Clevedon, Somerset.*

Wanted.—I need specimens of *Lycaena* (*Heodes*) *phlaeas* from all parts of the world, particularly Scandinavia, Russia, Siberia, Madeira, Canaries, N. Africa, Middle East counties, and E. Africa; also varieties from British Isles or elsewhere. I will purchase these, or offer in exchange good vars. of British Lepidoptera or many sorts of foreign and exotic Lepidoptera.—P. Siviter Smith, *21 Melville Hall, Holly Road, Edgbaston, Birmingham, 16.*

Wanted.—Various monthly parts of *Entomologist's Record* for 1914, 1915, 1916, 1917, 1919, and 1920. Please report any odd monthly parts (in wrappers as issued) prior to these years.—P. B. M. Allan, *4 Windhill, Bishop's Stortford, Herts.*

Wanted urgently for genetical purposes, pupae of *Selenia tetralunaria*.—Dr H. B. D. Kettlewell, *Homefield, Cranleigh, Surrey.*

Wanted.—Various Books on Lepidoptera. Please send lists and price. Also wanted, Live Exotic and English Lepidopterous Material for cash or exchange for similar material or Set English Imagines.—J. K. Goody, "Wel-don," *26 Carr Wood Road, Bramhall, Ches.*

Sale or Exchange—*R.E.S. Trans. and Proceed.*; bound, 1911 to 1916, 1918 to 1919; unbound, 1921 to 1923, 1925; also 1917 and 1924 less part 5. New Series—*Trans.*, Vols. 1 and 2, Vol. 3, part 1. *Proceed.*, Vol. 1 and Vol. 2, part 3. *Trans. Suffolk Naturalist Society*, Vol. 3 and Vol. 4, part 1. **Wanted**, bound or unbound, *Entomologist*, Vols. 2 and 3, 1926 and 1928, 1941 and 1942. *Ent. Mont. Mag.*, 1922, 1924-5, 1933-41. List on application.—F. W. Smith, *Boreland of Southwick, by Dumfries.*

Wanted, for experimental purposes, a few pupae of *Endromis versicolora*, purchase or exchange.—R. W. Parfitt, *1 Dunsdon Avenue, Guildford, Surrey.*

Wanted—Bristol board suitable for mounting Coleoptera. Also, Puton, A., 1878, "Synopsis des Hémiptères-Hétéroptères de France. Badonnel, A., 1943, *Faune de France*, No. 42, Psocoptères.—H. G. Stokes, *12 Roman Road, Salisbury, Wilts.*

For Disposal.—*Entomologist's Record*, Vols. 55 (1943) to 59 (1947) in parts, all in good condition. For cash, or in exchange for any of Dr Imms' Textbooks of Entomology including the latest.—Alan M. Maclaurin, *Oldhall House, Kilmacolm, Renfrewshire*

Wanted.—For the British Museum larval collection, larvae of Chrysomelid beetles, alive or preserved. Liberal exchange if required.—Dr S. Maultk, *British Museum (Natural History), Cromwell Road, London, S.W.7.*

Wanted to Purchase—Pupae in any quantity of any species of moths.—R. M. Rickard, *Coningsby, Lincoln.*

For Disposal—Barbut (J.), *The Genera Insectorum of Linnaeus*, 1781 (including 2 Plain and 20 Coloured Plates); *The Genera Vermium of Linnaeus*, 1783 (including 11 Coloured Plates); *The Genus Vermium of Linnaeus*, Part 2, 1788 (including 1 Plain and 13 Coloured Plates); the three works in 1 volume. What offers? I would exchange the above for Haworth, *Lepidoptera Britannica*, 1803-1827.—J. M. Chalmers-Hunt, *70 Chestnut Avenue, West Wickham, Kent.*

Wanted to Purchase—African Section of Seitz' *Macrolepidoptera of the World*, both Butterfly and Moth Volumes, either bound or in parts.—D. G. Sevastopulo, *c/o Rallt Brothers Ltd., P.O. Private Bag, Mombasa, Kenya Colony*

Wanted—Aberrational forms of *Lysandra coridon* in exchange for other aberrations of the same species.—Chas. B. Antram, "Clay Copse," *Sway, Lymington, Hants.*

Wanted—Distribution Records, Notes on Abundance and Information regarding Local Lists of the Dipterous Families Empididae and Conopidae.—Kenneth G. V. Smith, *Lutwyche Hall, near Much Wenlock, Shropshire.*

MEETINGS OF SOCIETIES.

Royal Entomological Society of London, 41 Queen's Gate, S.W.7: November 3rd, December 1st, at 5.30 p.m. *South London Entomological and Natural History Society*, c/o Royal Society, Burlington House, Piccadilly, W.1; 2nd and 4th Wednesdays; 6.0 for 6.30. *London Natural History Society*: Tuesdays, 6.30 p.m., at London School of Hygiene or Art-Workers' Guild Hall. Syllabus of Meetings from General Secretary, H. A. Toombs, Brit. Mus. (Nat. Hist.), Cromwell Road, S.W.7. *Birmingham Natural History and Philosophical Society—Entomological Section*: Last Friday in month, at 7 p.m., at the Birmingham Museum and Art Gallery. Particulars from the Hon. Secretary, G. B. Manly, 72 Tenbury Road, King's Heath, Birmingham, 14.

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The Annual Exhibition will be held at the apartments of The Royal Society, Burlington House, Piccadilly, London, W.1, on Saturday, 30th October 1948. Formal opening 2.30 p.m., but doors will be open from 11 a.m.

Communications received:—Thomas Greer, Fergus J. O'Rourke, O. Querci, H. Donisthorpe, Malcolm Burr, Surg.-Lt. Comm. H. M. Darlow, D. G. Sevastopulo, D. Fearnough, R. J. R. Levett, E. C. S. Blathwayt, E. P. Wiltshire, A. E. Wright.

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CONTENTS.

A NEW RACE OF COENONYMPHA PAMPHILUS, L., FROM THE HEBRIDES,
J. W. Heslop Harrison, D.Sc., F.R.S., ... 111

FIELD NOTES FROM ANATOLIA. V. ZONGULDAK, Malcolm Burr, D.Sc.,
F.R.E.S., ... 112

COLLECTING NOTES: Phalonia dipoltella, Hb., at Southampton, Wm. Fass-
nidge; Gracillaria cuculipennella, Hb., in Hampshire, Id.; Volucella zon-
aria (Dipt.), Cecil M. Gummer; Colias croceus at Swanage, Leonard
Tatchell; Discrepancy of Sex in Recorded Captures of Volucella zonaria,
Poda, H. W. Andrews, ... 115

CURRENT NOTES, ... 117

REVIEW, ... 117

SUPPLEMENT.

The British Noctuae and their Varieties, Hy. J. Turner, F.R.E.S.,
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A NEW RACE OF *COENONYMPHA PAMPHILUS*, L., FROM THE HEBRIDES.

By J. W. HESLOP HARRISON, D.Sc., F.R.S.

During the past few years, I have devoted a considerable amount of time to a study of the geographical variation of the Large Heath butterfly (*Coenonympha tullia*, Müll.). A similar study of its congener, *C. pamphilus*, L., was neglected because, like Ford (*Butterflies*, p. 293), I had always assumed that the Small Heath was "everywhere almost identical, though slightly paler in Scotland." However, in June this year, I collected a longish series of *C. pamphilus* on the Isle of Rhum, and later, in July, a second lot from the Blackhall Rocks, Co. Durham. In addition to these specimens, I was already in possession of a good series of the same species from various Yorkshire stations. When comparisons were made, it immediately became clear that, in general facies, the whole of the English insects agreed whilst, no matter whence they came, all were markedly different from the Rhum lot. As a matter of fact, it was obvious that the differences between Rhum and Northern English specimens were of the same order as those existing between examples of the related *C. tullia* from the same two areas.

When I realized these facts, I recalled that that keen student of variation, Dr Roger Verity, had described (*Buletino della Societa Entomologica Italiana*, xlii, p. 271, 1911) a race *scota* purporting to be from the north coast of Scotland. This race he states (*Entomologist's Record*, xxviii, p. 173, 1916), most emphatically, to possess an "excessively broad yellowish-white space on the underside, which in its fore part extends, both on the forewings and hindwings, as far as the ocellus or the ocelli." In these respects there is total disagreement between Verity's description of his *scota* and my Rhum series of *C. pamphilus*. In fact, I feel certain that, just as in the case of his *Pararge megera*, race *caledonia*, Verity has, by some *lapsus*, recorded northern English specimens as from the "far north of Scotland." This opinion receives support from the circumstance that my Blackhall Rocks examples fit the description of *scota* in every respect.

This leaves the Hebridean race of *C. pamphilus* without a name, and I therefore describe it as:

Coenonympha pamphilus, race *rhoumensis*.

Forewings: on the underside with a duller brown ground colour and with the pale area around the ocellus narrower than in northern English specimens of the species. Hindwings: on the underside English examples have the ground broken into three areas, a basal brownish portion tending to chestnut, a conspicuous yellowish-white median band, often quite broad, and a terminal or marginal band in which are to be seen the obsolescent brownish ocelli. In race *rhoumensis* the basal section is more or less grey sprinkled, its vestiture of greyish hairs preventing its ever appearing of a brown hue, whilst the inconspicuous median band, reduced in width and often obsolescent, especially toward the inner margin, is also of a greyer colour merging into that of the grey terminal band. Ocelli also greyer than in English specimens. On

the whole, race *rhoumensis* tends to agree in the uniformity of its under-side colouration with the race *scotica*, Stgr., of the allied species *C. tullia*.

Holotype ♂, allotype ♀ and 5 paratype ♂♂, Isle of Rhum, 9th-12th June; collected by J.W.H.H. and being deposited in the Hope Department, University Museum, Oxford.

FIELD NOTES FROM ANATOLIA. V. ZONGULDAK.

By MALCOLM BURR, D.Sc., F.R.E.S.

Plt. VI, Plt. VII.

Zonguldak is in the heart of Turkey's Black Country. It is on the north coast, a little colliery town, with the smell of coal dust in your nostrils on alighting from the train. In several ways it recalls Dover, on a smaller scale, a little port surrounded by hills, through which there is only one road leading out into the interior. But the hills around are not of chalk; they are of Carboniferous shales and sandstones, riddled with adits where primitive workings have sought the coal seams that crop out around.

When I awoke in the wagon-lit the morning after leaving Ankara, I found myself in another world. From a treeless plateau I had come to hilly forests, with wide open spaces of green fields and even hedges, with a vegetation that at first glance looked familiar. But a closer inspection showed it was not England after all, for the chief crop was maize and the big trees were planes, the shrubs chiefly bay, and, above all, *Rhododendron*, which here must be near the western limit of its distribution. The shrub flora consisted also of *Erica arborea*, bracken, plenty of *Cistus*, both pink and white, and I found a single specimen of *Digitalis ferruginea*, that I had understood was endemic on Uludagh. It is a poor thing after our own fine foxgloves, with dull yellow flowers.

The train runs along the coast, past the estuary of a little river, the Filyos chayı, then through a series of tunnels alongside the coast, again recalling the line from Folkestone to Dover, into the little bay of Zonguldak. It was 20th August.

The country looked promising, where I should find a different fauna and, I hoped, some interesting Decticeids, which had always had a warm corner in my heart. After lunch some local friends ran me out in a car up the single road that takes one out of the town, up a little valley cut by a brook with a trickle of water, iridescent with oil, trickling over black sand. Nothing could live in that stuff, I thought. I saw a blue dragonfly, *Sympetrum*, I think, but he was too clever for me. He must have been reared in one of the occasional pools of uncontaminated water. There were a few patches of sand, with clumps of *Persicaria*, where I found *Paratettix meridionalis* and *Tridactylus*, typical Mediterranean species.

I then climbed a steep hill of sandstone covered with thick bush of *Erica*, *Rhododendron* and bracken, *Sambucus ebulæ* with its black clusters of berries and masses of *Cistus*. It must be a lovely sight when all is in flower. Higher up there were thick clusters of beech, with curious pyramidical galls. But with all this exuberance of vegetation

BITTER ALMOND FOREST NEAR FETHIYE.



FOREST OF *PINUS BRUTEA*. SOUTH COAST OF TURKEY.



there was little visible animal life. The only birds I saw were a few wagtails near the brook and plenty of grey crows. Butterflies were not much in evidence. A single *P. podalirius* and a few charming little *Melitaea* graced the scene, with one or two *S. aegeria*, *P. rapae* and *P. brassicae* and *C. pamphilus* or closely related species. Not a sign of a blue, copper or skipper.

Orthoptera also were not numerous. I worked hard, beating and sweeping, but all I got were a few *Arachnocephalus* in the wispy grass and on a patch of stony ground *Acrydium depressum*; *Oedipoda caerulescens* common on open ground and a single *Acrotylus* gave a flash of pink. There were one or two grasshoppers, a few of the universal *Chorthippus* of the *biguttulus* group, a pair of *Omocestus ventralis*, a good many *Acrida turrita*, mostly of the grey-brown form, taking to wing freely, a fair number of *Calliptamus*, but in the field I could not be certain which species, and *Pezotettix giornae*; a single larva of *Anacridium aegyptium*. The only Tettigonid was a female *Phaneroptera*, presumably *quadripunctata*. There was not a species that is not common all the way from here to Gibraltar, and, what disappointed and surprised me, not a sign of a Decticid.

The only thing that was interesting was a single earwig, *F. auricularia*, a male, in which there was scarcely any basal dilatation of the forceps, that part being represented by a vestige of a prominence or blunt tooth quite near the base, while the specific tooth was well developed, further down. I worked hard to find another, as I was interested to see whether it were a local race or a freak. In the old days it would have been described as a new species. It was an interesting specimen, normally coloured though rather pale, macrolabious; the forceps seemed unusually slender. The only other earwig that rewarded my efforts was a female, very dark in colour, the elytra and wings almost black, like those in the Embassy garden in Istanbul, contrasting with my interesting pale male.

The next day my friend Kemal Bey, who loaded me with typical Turkish hospitality, motored me to the top of the highest hill in the district. It was a mass of dense thickets of beech, festooned with creepers with heart-shaped leaves and vicious spines. The place looked suitable for Decticids, especially in the occasional clearings, but in spite of all my efforts I did not see a sign of one. The beeches were all small, the result, I suppose, of deforestation, varied with a few equally scraggy oaks with the same thick undergrowth as lower down and a carpet of St John's Wort like an English shrubbery.

Here and there were open clearings with *Oedipoda caerulescens* and *Calliptamus*, a few *Aiolopus strepens*, a very small *Chorthippus* like *biguttulus*, some *Acrotylus insubricus* and a pair of *Omocestus ventralis*. At one spot an *Ectobius*, *lividus*. A single *Arachnocephalus* and one *Oecanthus pellucens*. The not very exciting day was cut short by the closing of the roads for military manoeuvres, so I was confined to town for the afternoon.

It was possible to get out of the town by rail, so next day I undertook an excursion to Filyos, about 24 kilometres to the east. Here I found an attractive-looking copse on the side of a hill, a shrubbery fragrant with bay, berberis with orange berries, juniper, *Osiris* with

scarlet berries, open patches of bramble, *Sambucus ebule*, butcher's broom and bracken, and myrtle with sweet white flowers. But the poverty in insects was the same. Of butterflies, *H. jurtina*, *P. rapae* and a few small dull blues. Of Orthoptera, only the same that I had seen on the previous days.

The sight of a marshy estuary encouraged me in the hope that I might find additional species. On the sand there was *Oedidopa caerulescens* and *O. miniata (gratiosa)*. More interesting was the occurrence on the open expanse of sand of numbers of the yellow-winged *Acrotylus longipes*, Charp. This elegant little "grass-"hopper has an interesting distribution. It is widely distributed over Africa, but in Europe seems to be restricted to the estuaries of southern rivers (see interesting article by O. Grebenschikov in *Proc. R. Ent. Soc.*, 22A, 1947, p. 101). This record of its occurrence at the mouth of the Filyos çayı may extend our knowledge of its distribution.

I swept systematically in the sodden grass and rushes at the edge of the swamp, but all that I got was plenty of *Acrida turrita*, a few *Chorthippus* cf. *biguttulus*, a single female of *Conocephalus fuscus* and a female nymph of *Homorocoryphus nitidulus*. It was not very exciting, I must admit, but the Filyos çayı at least added three species to my meagre list for the north coast. Of other Orthoptera, there were only some *Arachnocephalus* and a *Paratettix*.

The locality looked promising for Odonata, but there were few about. There was a medium-sized greenish one that tantalised me and I spent a long time trying to catch him, but he was too clever for me. Of the few that I sent home, Mr Cowley reports *Sympetrum meridionale*, *Sympetrum fusca* and *Ischnura elegans*, which are interesting as being, apparently, the first Odonata reported from that part of Turkey.

There was also a surprising scarcity of birds. I expected to see many kinds, especially after my experience of the wealth of bird life in the marshes of central Anatolia a couple of years ago. There were a number of gulls that looked like herring gulls, no doubt the yellow-legged race; a distant glimpse of a cormorant and the tracks of a heron in the sand. No small birds noticed in this deserted, broad open flat estuary. Of butterflies I noticed a very small *Meilitaea* and a single *Colias croceus*.

There seemed to be a better show of butterflies in the gardens of the town, as I had noticed in Ankara. *Argynnis pandora* is a constant visitor, in numbers, to the splendid Zinnias that do so well in Turkey, with a few *P. podalirius*, so these little gardens are a delight.

On 23rd August I spent the afternoon in a little gravelly bay near the town, a charming spot, but surprisingly lifeless. I climbed up a steep slope where the peasants had laboriously cleared a little scrub and planted maize. There, by search and patience, I found one ladybird, a tiny beetle and a very small yellow ant. I could see no sign of Collembola, Myriapoda nor Isopoda. Then I tried marine life and that, too, so far as I could tell, was just as sparse. There was a sort of high-water mark, due presumably to the level varying with the winds, in this tideless sea, but all I could find were some small limpets.

Anatolia is a strange country to collect in. Rich in endemic forms in great variety, nowhere have I found that exuberance of insect life



FETHIYE.



that one would expect at this latitude; nothing to compare with the quantities in, for instance, Spain, which is the orthopterist's paradise, or Macedonia. Recently I had a letter from my recent companion, Peter Davis, who this year has been in Spain. He was astonished, he writes, at the abundance of Orthoptera after the meagre quantities he had seen in the field with me in southern Anatolia. This sparsity extends to the European side of the Bosphorus. There, in the course of my walks during half-a-dozen summers, I have found about sixty-three species of Orthoptera, yet in Macedonia in three summers I found nearer 110. In Turkey I have not been lucky enough to hit upon the locality and season for such characteristic forms as *Bradyporus*, for instance, very few *Saga* and not many *Thrinchinae*, yet these were familiar or even abundant in Macedonia. Most surprising is the rarity of *Decticinae* in Anatolia. Round the Bosphorus I have found several species, but one has to work hard to get a few occasional specimens, whereas in Macedonia I could fill a bottle in a few minutes with many more kinds. On the north coast I did not see one single specimen. It is not from inexperience on my part, as I have been a collector, with considerable success, of these elusive creatures since boyhood, from the Canaries to Irkutsk.

Probably I have been unlucky in the season, so I must be patient and await better opportunities. In April 1946, too early for Orthoptera, in a ten-day run round the central steppe, contouring the great salt lake, my companion and I identified over a hundred species of birds, many of which I had never before seen alive, and, as for mammals, the steppe was then swarming with susliks, so much that several times we nearly ran over them as they popped across the road in front of us, and we moved one immense and exceedingly handsome fox. But in Orthoptera I have failed to bring home results even approaching my hopes.

COLLECTING NOTES.

PHALONIA DIPOLTELLA, HB., AT SOUTHAMPTON.—During the winter of 1947-8 I gathered a bunch of yarrow seed-heads from Southampton Common, a hundred yards from my house. From them I bred a number of *P. dipoltella*, Hb., during the latter half of July 1948. Unfortunately, I was unable to deal with the moths as they emerged, owing to illness, and only mounted two specimens instead of the series bred. The species is also recorded from the sea coast at Barton-on-Sea, Hampshire.—WM. FASSNIDGE, 4 Basset Crescent West, Southampton.

GRACILLARIA CUCULIPENNELLA, HB., IN HAMPSHIRE.—This species is said to be locally common in the south of England, feeding on the wild deciduous privet, and making its typical Gracillariid cones by folding tightly the tips of the leaves. Until now I had found larvae only in the Basses-Alpes, but on 31st July this year I found larval cones rather commonly on low scattered bushes on the edge of a copse at Farley Mount, near Winchester, where I had gone to see how *Myelois cirrigerella*, Zk., was getting on this year. I found no trace of moth nor larva, possibly owing to present-day intensive cultivation and conse-

quent restriction of permanent sites for the scabious. Of course, the moth is still present in this locality, but is far less common than when I first found it there.—WM. FASSNIDGE, 4 Basset Crescent West, Southampton.

VOLUCELLA ZONARIA (DIPT.).—In view of the record in your current issue of the capture of this fly at Herne Hill on 3rd July, the following may be of interest:—

On 5th September 1948 my son, Basil Gummer, took a specimen (♀) at Ivy Blossom at Upper Deal. The next day we saw about 10 more of them, and I continued to find one or two individuals at intervals up to 27th September—all in the same neighbourhood, feeding on Ivy Blossom in sunlight.

All of the half-dozen we took were females; and all but one are in the collection of my friend, Mr H. W. Andrews, F.R.E.S.—CECIL M. GUMMER, 14 Manor Road, Deal, 25th October 1948.

COLIAS CROCEUS AT SWANAGE.—It is worth recording that on Saturday, 23rd October, four ♂ *C. croceus* were observed at the foot of the Purbeck Range, about 2 miles from here. They were in fresh condition, and had evidently emerged quite recently.

The last few days *P. cardui*, *P. atalanta* and *P. phloea*s have been visiting the late blooms in my garden, but all in a very worn state.

Many half-grown larvae of *P. tracciae* are still feeding.—LEONARD TATCHELL, Rockleigh Cottage, Swanage.

DISCREPANCY OF SEX IN RECORDED CAPTURES OF VOLUCELLA ZONARIA, PODA.—On the 5th September this year Mr C. M. Gummer, of Deal, kindly sent me two specimens of this handsome Syrphid, and shortly afterwards four more. He wrote that they were not difficult to catch and that he had boxed these specimens off ivy blossom. The scarcity of wasps last summer does not appear to have affected this fly in his neighbourhood.

As all these specimens, as well as one he had previously sent me (23rd August 1946) were females, I asked Mr Gummer to look out for males. He replied that although he saw several more they, too, were females. At first I thought it just possible that as a lepidopterist he might have overlooked the difference between the sexes, but in looking up the records for *zonaria* in the *E.M.M.* I was surprised to notice the great preponderance of females. In those cases where the sex is mentioned, the figures are 27 females to 7 males, plus 3 males bred.

An analysis of the data afforded by the records shows that the dates given for the males are distinctly earlier than those for the females, all being in June, whereas the dates for the females are mostly in August and September, the earliest being 14th June. The three bred males mentioned above emerged between 29th May and 2nd June. The females were mostly taken at late summer or autumn flowers; buddleia, mint, and by far the most frequently at ivy blossom. Possibly the males are not so attracted by flowers as the females, but whatever the reason may be, this discrepancy in the proportions of the sexes as shown by the captures is certainly curious and I think worthy of note.—H. W. ANDREWS.

CURRENT NOTES.

TRANSPLANTING OF LOCAL INSECTS.—The Committee for the Protection of British Insects of the Royal Entomological Society of London has recently had under consideration the desirability of keeping records of attempts to introduce British Insects into new habitats. It is believed that many entomologists have made experiments of this nature which are nowhere recorded, and may, therefore, confuse local records. The Committee would welcome information concerning activities of this kind so that it may be filed in the Society's rooms, where it would be treated as confidential and made available only for approved investigations.—N. D. RILEY, Honorary Secretary.

UNUSUAL FOOD OF SPHINX LIGUSTRI, LINN.—On 8th September I found a larva of *S. ligustri* in its last instar feeding freely on a bush of *Spiraea* about five feet high (possibly "*Douglasii*"). Lilac and Privet were some fifty yards away. The larva has since pupated.—E. BARTON WHITE, F.R.E.S., Branton, N. Devon.

AMATHES C-NIGRUM, LINN., PAIRING WITH A. XANTHOGRAPHIA, FABR.—On 7th September, at 10.15 p.m., on one piece of sugared cork bark in the garden there were seven *c-nigrum* and nine *xanthographa* feeding. On the back of the cork was a *c-nigrum* in cop. with a *xanthographa*. There was a Westerly breeze, sky cloudy and temperature 61° F. The two moths were boxed, and the following morning, still attached, were placed in a cage with growing roots of chickweed, dock and grass with some flowers in water. On the fourth day they were still attached, but *xanthographa* died, and *c-nigrum* died the following day, without separating. They have been pinned in the position in which they died. *C-nigrum* appears to be the female. Though closely related, I have seen no previous record of these two species pairing. The moths were seen alive by Mr Geoffrey Cole and Dr F. R. Ellison-Wright, F.R.E.S.—E. BARTON WHITE, F.R.E.S., Branton, N. Devon.

COUNTRY-SIDE, the journal of the B.E.N.A., for June has an excellent illustration of the now notorious potato pest, the Colorado Beetle. It is rarely one gets a picture of the sociable habit of feeding of the grubs on the foliage.

REVIEW.

"**MOTHS AND MEMORIES**," by An Old Moth-hunter.—The author needs no introduction for his interesting experiences and observations on them are based on a long life of Entomology. The opening chapter, "Idle Gossip," tells us how the early introduction and guidance of his father led him to his finding in Devonshire an Oleander Hawk Moth, a very rare species never seen until many years after a crippled specimen in a dealer's window was described as "a very rare Butterfly known as the Large Copper and captured by a policeman near Clapham Junction." The long gossip ends with an incident related long ago of "His Majesty."

Moths are again the main topic in "Birch and Millers." A discussion on the contrast of birch and alder as food plants recalls to the author the words of the old dominie, the Rev. Mr Bramstone, on the "barbarous" birch:

No youth did in education waste,
Happy in an hereditary taste;
Writing ne'er cramped the sinews of my thumb,
Nor barbarous birch e'er brushed my tender bum.

The Millers next come in for consideration with *leporina* leading them. Another chapter deals with *Aporia crataegi* in Britain; once it was a very common species but now a very rare one. He shows how the insatiable greed of man has caused this. He calls in the evidence of its abundance in numerous localities, citing the evidence of entomologists of the greatest integrity as Jenner Weir, the friend of Darwin, J. W. Tutt; of others like Goss, once a secretary of the Entomological Society of London, noted for their insatiable acquisitiveness, down to the unscrupulous private dealers and to the collectors who left their work on Saturday afternoon and returned to normal work again on Monday. A very interesting assembly of names of many of the entomologists of the early half of the present generation.

In "Letters and Writers" we are treated to a farcical communication, "To a Young Lady who contemplated marrying an Entomologist." The pros and cons are given at considerable length but the answer is only an indefinite indication of the result. "Letters" giving the opinions and experiences have ever been attractive to one and all, specially if they be on the subject and objects in the mind of an entomologist. And here we have a chatty and useful selection from many of the well-known men and women of a passing generation, who not only recorded their experiences but their views on entomological questions of the day.

The British pass of the Jersey Tiger was a bone of contention for many years. It had, to my own knowledge, but one advocate, a dear old German music master, whom no one believed. A keen collector, he year after year spent his summer months at Star Cross, Devon. The faith in my old friend took me to Dawlish with the Tiger fully in mind. Strangely enough, within half-an-hour my quest was gained; I had met my first "Tiger" perched on a door in a garden wall, and before many days I had taken enough specimens for my own wants and a few for friends. It occurred for miles around.—And so on to the views of old on Immigration.

Space forbids further comment on "Wales and Moths," a valuable chapter of experiences with many local races in the beautiful vales of the Welsh Mountains; "Ghosts and *Cossus*," a valuable source of information on a specialized group of Heterocera; "Beer and Skittles" is an Introduction to the "off duty" of one of the meetings of the old Entomological Club; and, finally, "The Polyomma Club," of which something has been written in more recent times."—HY. J. T.

P.S.—The whole book is so deeply imbued with the love of the wilds of the old country that one suggests full support to those who fight to keep our Footpaths and Commons free and open to everyone.

EXCHANGES.

Subscribers may have Lists of Duplicates and Desiderata inserted free of charge. They should be sent to Mr HY. J. TURNER, "Latemar," West Drive, Cheam.

Wanted—*A. vestitalis* from all parts of the British coasts except south: also *R. simulans* and *S. ravidus* (*obscura*). Cash or exchange.—A. H. Sperring, *Stinson, Fifth Avenue, Warblington, Havant, Hants.*

Desiderata—Dipterous parasites bred from Lepidopterous larvae or pupae, or from any other animal.—H. Audcent, *Selwood House, Hill Road, Clevedon, Somerset.*

Wanted—I need specimens of *Lycaena* (*Heodes*) *phlaeas* from all parts of the world, particularly Scandinavia, Russia, Siberia, Madeira, Canaries, N. Africa, Middle East counties, and E. Africa; also varieties from British Isles or elsewhere. I will purchase these, or offer in exchange good vars. of British Lepidoptera or many sorts of foreign and exotic Lepidoptera.—P. Sitter Smith, *21 Melville Hall, Holly Road, Edgbaston, Birmingham, 16.*

Wanted—Various monthly parts of *Entomologist's Record* for 1914, 1915, 1916, 1917, 1919, and 1920. Please report any odd monthly parts (in wrappers as issued) prior to these years.—P. B. M. Allan, *4 Windhill, Bishop's Stortford, Herts.*

Wanted urgently for genetical purposes, pupae of *Selenia tetralunaria*.—Dr H. B. D. Kettlewell, *Homefield, Cranleigh, Surrey.*

Wanted—Various Books on Lepidoptera. Please send lists and price. Also wanted, Live Exotic and English Lepidopterous Material for cash or exchange for similar material or Set English Imagines.—J. K. Goody, "Weldon," *26 Carr Wood Road, Bramhall, Ches.*

Sale or Exchange—R.E.S. *Trans. and Proceed.*; bound, 1911 to 1916, 1918 to 1919; unbound, 1921 to 1923, 1925; also 1917 and 1924 less part 5. New Series—*Trans.*, Vols. 1 and 2, Vol. 3, part 1. *Proceed.*, Vol. 1 and Vol. 2, part 3. *Trans. Suffolk Naturalist Society*, Vol. 3 and Vol. 4, part 1. **Wanted**, bound or unbound, *Entomologist*, Vols. 2 and 3, 1926 and 1928, 1941 and 1942. *Ent. Mont. Mag.*, 1922, 1924-5, 1933-41. List on application.—F. W. Smith, *Boreland of Southwick, by Dumfries.*

Wanted, for experimental purposes, a few pupae of *Endromis versicolora*, purchase or exchange.—R. W. Parfitt, *1 Dunsdon Avenue, Guildford, Surrey.*

Wanted—Bristol board suitable for mounting Coleoptera. Also, Puton, A., 1878, "Synopsis des Hémiptères-Hétéroptères de France. Badonnel, A., 1943, *Faune de France*, No. 42, Psocoptères.—H. G. Stokes, *12 Roman Road, Salisbury, Wilts.*

For Disposal—*Entomologist's Record*, Vols. 55 (1943) to 59 (1947) in parts, all in good condition. For cash, or in exchange for any of Dr Imms' Textbooks of Entomology including the latest.—Alan M. MacLaurin, *Oldhall House, Kilmacollm, Renfrewshire*

Wanted—For the British Museum larval collection, larvae of Chrysomelid beetles, alive or preserved. Liberal exchange if required.—Dr S. Mautik, *British Museum (Natural History), Cromwell Road, London, S.W.7.*

Wanted to Purchase—Pupae in any quantity of any species of moths.—R. M. Rickard, *Coningsby, Lincoln.*

For Disposal—Barbut (J.), *The Genera Insectorum of Linnaeus*, 1781 (including 2 Plain and 20 Coloured Plates); *The Genera Vermium of Linnaeus*, 1783 (including 11 Coloured Plates); *The Genus Vermium of Linnaeus*, Part 2, 1788 (including 1 Plain and 13 Coloured Plates); the three works in 1 volume. What offers? I would exchange the above for Haworth, *Lepidoptera Britannica*, 1803-1827.—J. M. Chalmers-Hunt, *70 Chestnut Avenue, West Wickham, Kent.*

Wanted to Purchase—African Section of Seitz' *Macrolepidoptera of the World*, both Butterfly and Moth Volumes, either bound or in parts.—D. G. Sevastopulo, *c/o Ralli Brothers Ltd., P.O. Private Bag, Mombasa, Kenya Colony*

Wanted—Aberrational forms of *Lysandra coridon* in exchange for other aberrations of the same species.—Chas. B. Antram, "Clay Copse," *Sway, Lymington, Hants.*

Wanted—Distribution Records, Notes on Abundance and Information regarding Local Lists of the Dipterous Families Empididae and Conopidae.—Kenneth G. V. Smith, "Antiope," *38 Barrow Street, Much Wenlock, Salop.*

MEETINGS OF SOCIETIES.

Royal Entomological Society of London, 41 Queen's Gate, S.W.7: December 1st and January 19th, 1949 (Annual Meeting), at 5.30 p.m. *South London Entomological and Natural History Society*, c/o Royal Society, Burlington House, Piccadilly, W.1; 2nd and 4th Wednesdays; 6.0 for 6.30. *London Natural History Society*: Tuesdays, 6.30 p.m., at London School of Hygiene or Art-Workers' Guild Hall. Syllabus of Meetings from General Secretary, H. A. Toombs, Brit. Mus. (Nat. Hist.), Cromwell Road, S.W.7. *Birmingham Natural History and Philosophical Society—Entomological Section*: Last Friday in Month, at 7 p.m., at the Birmingham Museum and Art Gallery. Particulars from the Hon. Secretary, G. B. Manly, 72 Tenbury Road, King's Heath, Birmingham, 14.

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Change of Address:—The temporary address of Mr Kenneth J. Hayward of Tucuman will be, as from September, c/o Dept. of Entomology, British Museum of Natural History, London, S.W.7.

Communications received:—Thomas Greer, Fergus J. O'Rourke, O. Querci, H. Donisthorpe, Malcolm Burr, Surg.-Lt. Comm. H. M. Darlow, D. G. Sevastopulo, D. Fearnough, R. J. R. Levett, E. C. S. Blathwayt, E. P. Wiltshire, A. E. Wright.

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CONTENTS.

SOME NOTES ON PTINUS TECTUS. BOIELDIEUS (PTINIDAE) (COL.), <i>Horace Donisthorpe, F.Z.S., F.R.E.S., etc.,</i>	119
RHINGIA CAMPESTRIS, MG. (DIPT., SYRPHIDAE)—A FURTHER NOTE, <i>L. Parmenter.</i>	119
PIERIS NAPI, L. AB. ROTUNDA, AB. NOV., <i>Nigel T. Easton, D.F.H., F.R.E.S.,</i>	121
NOTE ON THE BUTTERFLIES OF THE NEW FOREST AREA IN 1948 COMPARED WITH 1947 AND WEATHER CONDITIONS,	122
COLLECTING NOTES: The Humming of Rhingia campestris, Mg., <i>L. Parmenter</i> ; Large Visitors to Sugar, <i>T. D. Fearnough</i> ; Opomyza petrei, <i>Mesnil</i> (Dipt., Opomyzidae) in Surrey and Sussex, <i>L. Parmenter</i> ; Some Early Appearances, <i>P. B. M. Allan</i>	124
CURRENT NOTES,	125
REVIEW	126

SUPPLEMENT.

The British Noctuae and their Varieties, <i>Hy. J. Turner, F.R.E.S., F.R.H.S.,</i>	(41)-(44)
---	-----------

INDEX.

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**SOME NOTES ON PTINUS TECTUS, BOIELDIEUS (PTINIDAE)
(COL.).**

MUS. COMP. ZOOL.

By HORACE DONISTHORPE, F.Z.S., F.R.E.S., etc.

JAN 14 1949

At a meeting of the Nederlandsche Entomologische Vereeniging, held on 2nd March 1947, Mr MacGillavry sent a note mentioning the fact that the *British Pharmaceutical Journal* of 25th January 1947, p. 60, had recorded that *Ptinus tectus*, Boield., had been present as a parasite in the alimentary canal of a patient. Several of the members present expressed the view that this matter should be regarded with great caution. This view had been strongly taken by Dr Van Emden in a letter to the *British Medical Journal* published on 15th March 1947 (Vol. I, p. 350). The larvae in question had been identified by Dr Van Emden, and in the letter, quoted above, he shows very clearly, both by reasoning and experiments, that these creatures could not live in the stomach of a human being, and that they had not passed the intestine.

All these cases, to my mind, are extremely doubtful. In the *Entomologist's Record* for 1942 (Vol. 54, p. 79) I recorded that the Keeper of Entomology in the British Museum (Nat. Hist.) had submitted three beetles to me to identify, which had been sent to him by a doctor at the Royal Cancer Hospital. It was stated that these beetles had been passed by a female patient in her urine. These proved to be common British beetles, and I pointed out that it was, of course, impossible that they could, in any case, get into a person's bladder.

Ptinus tectus, Boield., is rapidly extending its range in Britain. In a paper in the *Vasculum* in 1920 (Vol. 6, p. 35) on the extensions of range of various Coleoptera recently brought forward in the British list, I pointed out that this beetle was first taken in Britain by my old friend the late Arthur Chitty in 1892, when I took him to a granary in High Holborn, where I frequently went to hunt for beetles, etc. Also that on visiting that granary in company with the late Hereward Dollman, *Ptinus tectus* was present in numbers all over the granary, from the attics to the cellars. I also gave many other recent records of the beetle.

It is now quite common in the Natural History Museum, and I recently recorded it, and its larvae, from a pigeon's nest, high up on a ledge on an outer wall of the Museum [*Ent. Mo. Mag.*, 83, 294 (1947)]. Since I wrote that paper in 1920 *Ptinus tectus* has been found in many other British localities.

**RHINGIA CAMPESTRIS, MG. (DIPT., SYRPHIDAE)—A FURTHER
NOTE.**

By L. PARMENTER.

I should like to confirm the experiences of Messrs B. R. Laurence, H. W. Andrews and B. Verdcourt (*antea*, p. 100, 107-8) as to the scarcity of this insect in 1948. Although I spent many hours in the field

this season, chiefly in Surrey, it was not until I arrived in Pembroke-shire at Haverfordwest on 31st July that I saw my first *campestris* of the year, a female visiting Knapweed flowerheads. Several were seen during the day and during early August about Dale Fort, and in mid August near Weymouth and Moreton, Dorset. My only Surrey record for the year was of one visiting the flowers of Water Mint at Bookham Common on 12th September, whereas in 1947 it was common, particularly so for the spring brood.

The larvae live in cow-dung but the adults are attracted to a large variety of flowers, the specially constructed proboscis enabling this species to take nectar from flowers with a long corolla. The flies visit flowers of *Ranunculaceae*, *Cruciferae*, *Violaceae*, *Caryophyllaceae*, *Geraniaceae*, *Rosaceae*, *Lythraceae*, *Umbelliferae*, *Dipsacaceae*, *Compositae*, *Ericaceae*, *Primulaceae*, *Convolvulaceae*, *Labiatae*, *Liliaceae*.

I append lists of the flowers visited per month as I have noted them in the field:—

APRIL—Primrose, *Primula vulgaris*, Huds.

MAY—Lesser Celandine, *Ranunculus ficaria*, L.; Hedge Garlic Mustard, *Nasturtium officinale*, R. Br.; Cuckoo Flower, *Cardamine pratensis*, L.; Yellow Garlic Mustard, *Sisymbrium officinale*, L. (Scop.); Violet, *Viola* sp.; Red Campion, *Melandrium dioicum*, (L.) Coss. & Germ.; Silverweed, *Potentilla anserina*, L.; Blackthorn, *Prunus spinosa*, L.; Hawthorn, *Crataegus oxyacanthoides*, Thuill., and *monogyna*, Jacq.; Oxford Ragwort, *Senecio squalidus*, L.; Dandelion, *Taraxacum officinale*, Weber; Primrose, *Primula vulgaris*, Huds.; Ground Ivy, *Glechoma hederacea*, L.; Bugle, *Ajuga reptans*, L.; and Bluebell, *Scilla non-scripta*, (L.) Hoffngg. & Link.

JUNE—Creeping Buttercup, *Ranunculus repens*, L.; Ragged Robin, *Lychnis flos-cuculi*, L.; Herb Robert, *Geranium robertianum*, L.; Hogweed, *Heracleum sphondylium*, L.; Creeping Thistle, *Cirsium arvense*, (L.) Scop.; White Deadnettle, *Lamium album*, L.

JULY—Knapweed, *Centaurea nigra*, L.; Hedge Woundwort, *Stachys sylvatica*, L.; and Bugle, *Ajuga reptans*, L.

AUGUST—Lesser Spearwort, *Ranunculus flammula*, L.; Herb Robert, *Geranium robertianum*, L.; Red Campion, *Melandrium dioicum*, (L.) Coss. & Germ.; Purple Loosestrife, *Lythrum salicaria*, L.; Knapweed, *Centaurea nigra*, L.; Great Knapweed, *Centaurea scabiosa*, L.; Burdock, *Arctium* sp.; Ling, *Calluna vulgaris*, (L.) Hull; Sea Bindweed, *Calystegia soldanella*, (L.) R. Br.; Large Bindweed, *Calystegia sepium*, (L.) R. Br.; Corn Bindweed, *Convolvulus arvensis*, L.; Self Heal, *Prunella vulgaris*, L.; and Hedge Woundwort, *Stachys sylvatica*, L.

SEPTEMBER—White Campion, *Melandrium album*, (Mill.) Garcke; Devil's Bit Scabious, *Succisa pratensis*, Moench; Large Bindweed, *Calystegia sepium*, (L.) R. Br.; and Water Mint, *Mentha aquatica*, L.

No doubt most dipterists keep a sharp look out for *Rhingia* in view of the presence in this country of the less common *rostrata*, (L.). Perhaps Mr Laurence would undertake the organisation of a survey during 1949 by dipterists throughout the country to see how *campestris* recovers and possibly to combine with it some studies on the flowers visited. Whether individuals have preferences or the species as a whole has predilections.

PIERIS NAPI, L.*Ab. rotunda*, ab. nov.

By NIGEL T. EASTON, D.F.H., F.R.E.S.

In a brood of *Pieris napi*, homozygous for ab. *hibernica*, Schmidt, 1 bred, this August, a total of 18 imagines of what I believe to be a form of this butterfly hitherto unnamed.

This form is readily distinguished from typical *P. napi* in that the outer margin of the forewings is strongly convex and the apical angle distinctly obtuse. In the majority of those which I have bred the distance between apex and inner angle of the forewings is almost equal to the distance between base and apex.

In the majority of examples I have bred the veins of the forewings, instead of bending downwards from base to margin, turn distinctly upwards, being distorted by the convexity of the outer margin. This could clearly be seen from the representative series which I exhibited at the Annual Conversazione of the South London Entomological Society on 30th October 1948.

This peculiarity of wing structure, whilst not preventing, nevertheless considerably affects flight by slowing it down to a great extent so that it somewhat resembles that of *L. sinapis*.

This brood of 84 pupae has produced a partial emergence, over a period of 10 days, of 63 imagines; 18 of them (4 males and 14 females) were of this form. Segregation was distinct and, though 21 pupae have not yet hatched, the number which emerged this August, i.e., 63, is a sufficiently large one to bear significance in statistical application. It would appear, therefore, that the 25% segregation of a simple Mendelian recessive has been realized.

In 17 out of 18 cases this new round-winged form is associated with dwarfing, the imagines having an average span of only 33 mm.

There appeared to be repulsion between males and females of this distinctive form in the breeding cage and only one homozygous \times homozygous pairing was secured. This proved infertile. Pairings between one round-wing and one normal-wing imago, in the same brood, produced a small number of larvae which were definitely weakly, so that very few pupae were obtained.

It is interesting to record that I first bred a male of this form in August 1947 and that the paternal parent of the present brood was actually a full brother (though apparently normal) which overwintered. The female parent was a cousin so that it now seems feasible that each parent carried a single dose of the gene, though, of course, it was not possible to recognise it at the time of pairing. It should furthermore be made clear that the associated dwarfing was in no way caused environmentally. It was remarked at the time that a proportion of the larvae were spinning, apparently prematurely, for pupation.

It may here be mentioned that 5 out of the 18 round-winged form had bright green unpigmented antennae clubs and that an uncounted number of the pupae of this interesting brood were quite glossy in appearance. Some pupal adhesion, amounting to 15% of the whole num-

ber so far bred, was also experienced. A scale defect in one female caused uneven distribution of yellow scales producing a white and yellow patchy effect giving the insect a superficial resemblance to a heterochroic mosaic.

I, therefore, name this round-winged form
rotunda, ab. nov.

Holotype. ♂. Bred 19.8.48, N. T. Easton; Welford × Donegal origin, in my collection.

Allotype. ♀. Bred 24.8.48, N. T. Easton; Welford × Donegal origin, in my collection.

♂ *Paratypes*.

No. 1.	Bred	18.8.47,	N. T. Easton,	Welford	×	Donegal	origin.
No. 2.	„	18.8.47,	„	„	„	„	„
No. 3.	„	16.8.48,	„	„	„	„	„
No. 4.	„	17.8.48,	„	„	„	„	„
No. 5.	„	20.8.48,	„	„	„	„	„

♀ *Paratypes*.

No. 6.	Bred	17.8.47,	N. T. Easton,	Welford	×	Donegal	origin.
No. 7.	„	18.8.47,	„	„	„	„	„
No. 8.	„	15.8.48,	„	„	„	„	„
No. 9.	„	16.8.48,	„	„	„	„	„
No. 10.	„	19.8.48,	„	„	„	„	„
No. 11.	„	20.8.48,	„	„	„	„	„
No. 12.	„	20.8.48,	„	„	„	„	„
No. 13.	„	20.8.48,	„	„	„	„	„
No. 14.	„	20.8.48,	„	„	„	„	„
No. 15.	„	20.8.48,	„	„	„	„	„
No. 16.	„	21.8.48,	„	„	„	„	„
No. 17.	„	22.8.48,	„	„	„	„	„
No. 18.	„	22.8.48,	„	„	„	„	„
No. 19.	„	23.8.48,	„	„	„	„	„
No. 20.	„	24.8.48,	„	„	„	„	„

All Paratypes are in my collection.

I am indebted to Mr Antony J. Thompson, M.A., F.R.E.S., for his confirmation of the above data and conclusions.

NOTE ON THE BUTTERFLIES OF THE NEW FOREST AREA IN 1948 COMPARED WITH 1947 AND WEATHER CONDITIONS.

Compared with last year which was wonderful for butterfly collectors, 1948 has been on the whole rather unsatisfactory, in that weather conditions were against the prevalence of most species in any number. A few species were just as plentiful as in last year but the majority exceedingly scarce, as for example, even our very common "Cabbage White" was almost a rarity throughout the year. The splendid summer of '47 gave us a "Clouded Yellow" year with four overlapping

broods extending to the end of October and into November while only a very few specimens were observed this last season. The early months saw the usual spring species but nothing in any great number except perhaps the "Orange Tip." Of this latter I had the great good fortune to secure a perfect specimen of the pale yellow tipped aberration, *aureoflavescens*, Ckll., on the 15th May.

May was a gloriously fine month and the following species were in fair numbers though not common:—*Cyaniris argiolus*, *Argynnis euphrosyne*, *Callophrys rubi* and the usual kinds out at that time while hardly any of the "Small Copper" were seen. This last mentioned was very scarce throughout the year in any of its broods. On the 12th May I discovered *Melitaea cinxia* in good quantity near here. Larvae from the Isle of Wight had been put down recently and it is satisfactory to note that it is well established and spreading. I took only a very few and will be watching its development.

Climatic conditions in June and July were rather too wet and cold, without any long spells of fine weather with the result that the usually prevalent *Lim. sibylla* and *Arg. paphia* were scarce and only a very few *ralesina* form of the latter seen. On the other hand a large number of larvae of *Thecla quercus* were obtained by beating and the butterfly was very numerous in the second half of July. I found also by beating Blackthorn, half to full-fed larvae of *Zephyrus betulae* in two or three localities near here between the 15th and 18th June and a fine series of this butterfly emerged at the end of July. Emergence took place almost without exception in the mornings between 9 and 11 o'clock. Out of about 50 the sexes were about even, the males appearing first.

Lycaena icarus nowhere was as common as usual but on the other hand *Lyc. aegon* was very plentiful, some good aberrations in underside markings being obtained. *Zizera minima* was almost non-existent.

Stepping over the Hants border into Dorset, *Lysandra coridon* was in its usual abundance in the last week of July and throughout August. At Worth it was simply swarming and a large number of good, besides the commoner aberrations, were obtained such as, a few *fowleri*, *striata*, *pulla*, *sessilis*, *albonigrofimbriata*, *fusco* and *albofimbriata*, *glomerata*, *tarescens* and *postimpar*, etc. *Caeca* and other *obsoleta* forms were scarce. *Lycaena bellargus* appeared quite early in the first week of August continuing to the end of that month. They were taken flying with the *coridon* and there were also *icarus* and *argus* in fair quantity, while *M. galatea* was in thousands.

The poor summer of 1948 has therefore apparently not adversely affected the development of a number of species although nothing like last year when the majority were exceedingly numerous.

It might be mentioned that amongst Moths, *Sphinx pinastri*, not so many years ago very scarce, was very common in the Bournemouth area and generally throughout the New Forest in 1948. Many of the moths were taken, at rest on tree trunks, etc., and eggs obtained from which a number are now in chrysalis. This is a difficult insect to bring through to the imago, at all events in captivity. Out of over 200 fertile eggs, all of which hatched, only about a couple of dozen have come through to the chrysalis. Some pupae have also been obtained by digging round the base of fir trees in the neighbourhood.

Consequent on the unfavourable weather from June onwards there has been no collecting in the butterfly line worth doing since about the middle of September; very little has been seen on the wing with the exception of an odd Red Admiral, Peacock or Comma. At about this time last year the Clouded Yellow and other species were still in good quantity throughout October and continuing well into November.

CHAS. B. ANTRAM.

"Clay Copse," Sway, Lyminster, Hants.
November 1948.

COLLECTING NOTES.

THE HUMMING OF RHINGIA CAMPESTRIS, Mg.—Whilst looking through my notes on the above species I came across the following entry of 10th August 1936:—

"I held a *campestris* by the wings. The fly made the characteristic high-pitched hum. I examined it with my 10× lens and found that the sound came from the proboscis, the lower portion being rapidly vibrated. The vibrations could be felt with the finger held close to the 'beak.' The halteres were vibrated but slowly and at times were stationary. No hum was audible from them. I released the fly and it flew over my head with a deeper hum. Holding *Eristalis pertinax*, Scop., the hum was deeper when the wings were moving and high when only the halteres were vibrated."

I have tried with other Hover flies, holding the wings, but have not been able to convince myself of the correctness of my observation on *campestris*. A. D. Imms in *Insect Natural History*, 1947, p. 88, mentions "authorities" who think the hum is caused by the vibration of a fine membrane situated just internal to the thoracic breathing pores; another "authority" who caused the hum to cease by closing these pores with gum or wax stated that the removal of the wings did not influence the sound. He concludes: "It is a nice little problem for some enthusiast to try to elucidate." Has anyone any further evidence?—L. PARMENTER, 94 Fairlands Avenue, Thornton Heath, Surrey, 5th November 1948.

LARGE VISITOR TO SUGAR.—When the return to Greenwich mean time brought the close of day within working hours it became impossible to sugar at the prescribed time. I conceived the idea of sugaring in the morning and visiting the beat after nightfall on my way home from business. On the first morning the sugar had not been on the tree trunks many minutes when I surprised, on one of the patches, a grey squirrel ecstatically lapping up my rum-laced mixture. It refused to be shooed away further than the next tree, where, at a safe height, it chattered angrily. No doubt on my departure it would return to the interrupted feast. When such large creatures become addicted, sugaring is unlikely to prove an economic proposition.—T. D. FEARNEHOUGH, 25 Ramsey Road, Sheffield.

OPOMYZA PETREI, MESNIL (DIPT., OPOMYZIDAE) IN SURREY AND SUSSEX.—This species was introduced to the British List by Mr J. E. Collin in 1945—*The British Species of Opomyzidae (Diptera)*. *Ent. Rec.*, 57: 13-16. In a small collection of diptera that my friend, Mr M. Niblett, has allowed me to examine recently, I found a specimen of this fly taken at Epsom Common, Surrey, on 17th August 1932, swept from Creeping Thistle, *Cirsium arvense*, (L.) Scop. This is an additional county to the four English and one Scottish given by Mr Collin. In my own collection I had separated the following specimens from the common *germinationis*, L., which prove to be *petrei*:—Mitcham Common, Surrey, 26th July 1936; Staffhurst Woods, Limpsfield, Surrey, 16th July 1939; and Balcombe, Sussex, 24th July 1938. Mr Collin does not give dates for the imago and it would be interesting if other dipterists would record their captures, especially where they can extend our knowledge of its distribution and flight dates of 16th July-17th August. Balachowsky, A., and Mesnil, L., 1935-36, *Les insectes nuisibles aux plantes cultivées*, recorded the breeding of *petrei* from Vernal Grass, *Anthoxanthum odoratum*, L.—L. PARMENTER, 94 Fairlands Avenue, Thornton Heath, Surrey, 5th November 1948.

SOME EARLY APPEARANCES.—Some *A. villica* in my cages are now nearly full-grown; but a brood of *N. plantaginis* is still asleep, as are a few *D. fascelina*. Yesterday I found a *T. cruda* or *pulverulenta* on a lamp in the town, and salallows here are in full bloom. A wonderful March—but I fear we shall pay for it later.—P. B. M. ALLAN, 1.iii.48.

CURRENT NOTES.

To my suggestion to practical entomologists, especially Lepidopterists and collectors, to bye-pass all species that have no outward and visible differences from other species under the title Genitalic Species, I have so far had only two critical remarks: (1) That names have already been given to many species. Surely that does not matter. (2) The two species *psi* and *tridens* have been cited as outwardly inseparable. Their larvae are amply different and dried fresh examples are different; *tridens* has a very delicate but very evanescent pinkish suffusion. Admitted that older specimens cannot be otherwise differentiated unless their genitalia be examined.

IN a letter from Dr Burr in Istanbul, just received, he says he has been too much engaged in getting back to his usual health after his operation and the subsequent serious indisposition of Mrs Burr that to get out into the field this season was impossible. He goes on to say that "My collecting has been confined to my bathroom, the fauna of which has included 2 *Blatta orientalis*, 2 Buprestid beetles, and a *Macroglossum stellatarum* that hummed to me like a turbine when I was shaving this morning."

WE have received from Mr J. E. Collin, J.P., F.R.E.S., "Raylands," Newmarket, a notice that the famous Verrall Supper will be held on 18th January at the Holborn Restaurant, where it has usually

been held in the past. After being in abeyance for nearly ten years, there should be a memorable reunion of old friends of the "net and pin." We presume that 100 will be the limit to those who sit down, but the actual Reunion from about 6 o'clock to 8 may have others who cannot join in the restricted meeting. The announcement circular contains about a hundred names of those who were at the last pre-war meeting. Those who have fallen out during the long years will allow invitations to be given to many a new enthusiast. The Circular contains an account of the original and subsequent history of this function during the life of the great British Dipterist. It is suggested that in the future the date of this Annual Event should be in September, at the end of the season, not in the midst of winter weather. What do Entomologists think of the proposal?—HY. J. T.

REVIEW.

BUTTERFLY HAUNTS.—L. Hugh Newman, F.R.E.S., F.R.H.S.; 21/-; Messrs Chapman & Hall, Ltd., 37 Essex Street, London, W.C.2. This work is remarkable for its all-round excellence. The illustrations are the most perfect reproductions of a long series of photographs so beautiful as to be beyond criticism. Each illustration is of a delightful area which the species of butterfly has chosen as one of its haunts. Some of these Nature resorts are extensive areas of hillsides and low-land, others are small lanes and open woods, but in all of them the effects of the brilliant sunshine is outstandingly wonderful. The glades of the open forest, the down-land, the coast, the pasture and flowery areas are among the Butterfly Haunts, and all must not fail to remind us of many a quest of long ago.

Some of these illustrations have incidentally included items of more general interest—a horse and cart coming up a lane into the light; a sheep standing alone on a sunny track in an open forest glade; a horse emerging into a lane, beautifully seen; a ploughman and his horse are examples, all excellently falling into place in the Haunt to which they belong.

It was generally feared and expressed strongly that the exact Haunts would be exactly located in the text. But no lover of this beautiful country could complain that the Haunts have been localized in any case. They have, of course, been characterized.

The smaller illustrations are equally excellent in their execution, but are devoted more to the private life of each of the British species of butterfly as we see posed in the sun's rays in our gardens. Each illustration is a record of the butterfly's actual choice of its resting place and surroundings, its own selection of position as regards the sun's rays either for feeding, enjoyment of the warmth or resting at intervals. This record is a most remarkable and correct feature of the work.

All who have been engaged in aiding the talented author in the production must have been true artists in their own line and with the skill afforded by the publishers have succeeded beyond ordinary expectation.—HY. J. T.

SPECIAL INDEX.

VOL. LX., 1948.

The Entomologist's Record and Journal of Variation

The names in this Index are placed alphabetically under specific names.

The terms "var." and "ab." are used in Staudinger's sense, "f." (forma) indicating a form of which the exact status seems doubtful.

* indicates a new name.

** indicates an addition to the British List under an old name.

	PAGE		PAGE
BLATTOIDA.			
lividus, Ectobius	113	diaphanus, Allocostylus	51
orientalis, Blatta	125	flavifrons, Helomyza	38
COLEOPTERA.		gibbosus, Oncodes	101
agrestis, Aseum striatum ab.	69	globulus, Acrocera	101
arietis, Clytus	70	*macula, Syntormon	70
bifasciatum, Rhagium	69	modesta, Clythia (Platypeza) ..	51
cerambyciformis, Judolia	70	nigritibia, Episyrphus auricollis	
chrysogaster, Stenocorus meri-		var.	51
dianus ab.	69	pallidiventris, Tetanura	51
disconotata, Strangalia macu-		pardalina, Piezura	51
lata ab.	70	petrei, Opomyza	125
gigas, Procrustes	104	rufa, Clythia (Platypeza)	51
latifasciatum, Rhagium bifas-		scutellaris, Phaonia	51
ciatum ab.	69	setosa, Syntormon	70
maculata, Strangalia	70	tincta, Mydaea	51
meridianus, Stenocorus	69	variegata, Phaonia	51
mordax, Rhagium	69	versicolor, Pegomya	38
praeusta, Tetrops	70	zonaria, Volucella	108, 116
ruficornis, Grammoptera	69	HYMENOPTERA.	
Stenotarsus sp.	22	aestaceopilosa, Aphaenogaster	95
striatum, Aseum	69	[see also testaceopilosa]	
tabacicolor, Allosterna	69	aethiops, Camponotus	59
tectus, Ptinus	119	auberti, Cremastogaster	64
undulata, Strangalia maculata		barbarus, Messor	62
ab.	70	*Dorothea	65
DERMAPTERA.		kiesenwetteri, Camponotus	61
auricularia, Forficula	104, 113	meridionalis, Messor barbarus	62
hincksi, Forficula	104	*novobritainae, Dorothea	65
kosswigi, Pseudisolabis	13	orientalis, Vespa	73
DIPTERA.		pygmaea, Plagiolepis	62
albinargo, Pegomya	38	semipolita, Aphaenogaster tes-	
anilis, Neuroctena	51	taceopilosa	95
Asilid (Unnamed)	14, 73	sordidula, Cremastogaster	59
atricornis, Allophyla	51	Sphex sp.	105
auricollis, Episyrphus	51	testaceopilosa, Aphaenogaster	60, 95
balteatus, Syrphus	107	vagans, Diacamma	22
campestris, Rhingia ...	100, 107, 108, 119, 124	LEPIDOPTERA.	
consobrina, Clythia (Platypeza)	51	absinthii, Cucullia	100, 108
curvipes, Campsigenemus	70	achromaria, Cidaria	82
demandata, Physiphora	50	actaeon, Pamphila	37
denticulatus, Syntormon	70	advenaria, Cepphis	29
		aegeria, Pararge ...	20, 26, 34, 36, 45, 93, 113

	PAGE		PAGE
aescularia, <i>Alsophila</i>	29, 44	briseis, <i>Satyrus</i>	103, 104
aestivaria, <i>Macaria</i>	82	brumata, <i>Operophtera</i>	22, 23, 32, 45
agestis: see <i>medon</i>		caja, <i>Arctia</i>	106
aglaia, <i>Argynnis</i> : see <i>charlotta</i>		c-album, <i>Vanessa</i>	20, 24, 25, 29, 34, 36, 37, 93
albicillata, <i>Mesoleuca</i>	66	camilla, <i>Limenitis</i> ...	25, 27, 30, 34, 36, 37, 45, 97, 101, 123
albidentaria, <i>Pericyma</i>	81	capucina, <i>Lophopteryx</i>	29
albipunctaria, <i>Eupithecia</i>	107	coridon, <i>Lycaena</i> (<i>Polyommatus</i> , <i>Lysandra</i>) ...	24, 26, 31, 35, 37, 42, 46, 123
albula, <i>Nola</i>	30	correptaria, <i>Boarmia</i>	87
alchemillata, <i>Perizoma</i>	107	corticea, " <i>Agrotis</i> "	21
algae, <i>Nonagria</i>	31	coryli, <i>Colocasia</i> (<i>Demas</i>)	31
amata, <i>Calothyranis</i>	93	crepuscularia, <i>Ectropis</i>	9, 19
anaphanes, <i>Autophila</i>	87	creticum, <i>Cochlidion</i>	80
anceps, <i>Antitype</i>	81	croceus, <i>Colias</i> ...	6, 13, 21, 22, 24, 26, 28, 31, 35, 43, 45, 66, 92, 96, 105, 114, 116, 122
anceps, <i>Notodonta</i>	29	cruda, <i>Episema</i> (<i>Orthosia</i>) ...	44, 125
andrenaeformis, <i>Conopia</i>	52	cuculipennella, <i>Caloptilia</i>	115
angelicata, <i>Eupithecia albipunctata</i>	107	cucullina, <i>Notodonta</i>	31
antiquus, <i>Notolophus</i>	32	culeiformis, <i>Conopia</i>	52
antiopa, <i>Vanessa</i>	45	cultraria, <i>Drepana</i>	107
areola, <i>Xylocampa</i>	48	curtula, <i>Pygaera</i> (<i>Clostera</i>) ...	30
arge, <i>Melanargia</i>	57	cydippe, <i>Argynnis</i> ...	25, 30, 34, 37
argiolus, <i>Lycaenopsis</i> (<i>Celastrina</i>) ...	21, 27, 29, 34, 36, 41, 93, 96, 123	cypria, <i>Thais cerysi</i>	85
argus, <i>Plebeius</i>	25, 30, 123	cypriaca, <i>Autophila anaphanes</i>	87
asinalis, <i>Mecyna</i>	107	cypriaca, <i>Hipparchia syriaca</i> ..	85
asperaria, <i>Rhoptria</i>	82	cyprogene, <i>Apopestes luxuriosa</i>	87
astabene, <i>Philotes</i>	86	deceptrix, <i>Catamecia</i>	1
atalanta, <i>Vanessa</i> ...	24, 25, 31, 34, 36, 37, 41, 43, 45, 93, 95	defoliaria, <i>Erannis</i>	22, 32, 44, 45, 92
athalia, <i>Melitaea</i>	8, 96	deplana, <i>Eilema</i>	9, 30
Athi River, Kenya, Butterflies	97	deserticola, <i>Leucania</i>	86
atlantica, <i>Nyssia zonaria</i>	9	dilucida, <i>Autophila</i>	81
atomaria, <i>Ematurga</i>	36	diluta, <i>Asphalia</i>	32
aurantiaria, <i>Erannis</i>	22, 32	dilutata, <i>Oporinia</i>	22, 32
aurinia, <i>Melitaea</i>	8, 20, 26, 36, 88	diplocapna, <i>Nephopteryx</i>	3
aurita, <i>Amephane</i>	81	dipoltella, <i>Phalonia</i>	115
badiana, <i>Ancylis</i>	93	dipsacea: see <i>viriplaca</i>	
badicata, <i>Cidaria</i> (<i>Earophila</i>) ..	92	dispar, <i>Lymantria</i>	81
balcanicus, <i>Thecla</i>	86	diversa, <i>Catocala</i>	2
barthae, <i>Cucullia</i>	81	dodoneata, <i>Eupithecia</i>	82
belisarius, <i>Vanessa</i> io ab.	37	dominula, <i>Callimorpha</i>	36
bellargus, <i>Lycaena</i> (<i>Agriades</i>)		dromedarius, <i>Notodonta</i>	107
24, 26, 27, 31, 35, 37, 43, 55,	123	*drayi, <i>Cochlidion creticum</i> ...	80
bembeciformis, <i>Aegeria</i> (<i>Sphacia</i>)	30	dubiosa, <i>Eupithecia</i>	82
benedictina, <i>Meganephria oxyacanthae</i>	86	**duratella, <i>Exapate</i>	6
benesignata, <i>Spilosoma lutea</i> ab.	4	efformata, <i>Anaitis</i>	32
berytaria, <i>Itame</i>	87	elinguaria, <i>Crocallis</i>	107
betulae, <i>Thecla</i>	35, 123	elpenor, <i>Deilephila</i>	107
**betulinella, <i>Anacamptis</i>	5	ericetaria, <i>S.</i>	87
bifasciata, <i>Cidaria</i> (<i>Perizoma</i>)	107	euphrosyne, <i>Argynnis</i> ...	8, 21, 29, 30, 35, 36, 123
bilunaria, <i>Selenia</i>	21, 30, 93	eutychea, <i>Catocala</i>	81
bimaculata, <i>Bapta</i>	107	exigua, <i>Laphygma</i> ...	6, 31, 45, 106
binaevella, <i>Homoeosoma</i>	107	exoleta, <i>Calocampa</i>	81
binaria, <i>Drepana</i>	107	externata, <i>Oulbophora</i>	83
bistortata, <i>Ectropis</i>	9	fabriciana, <i>Anthophila</i>	
blandina, <i>Erebia</i>	38	(<i>Simaethis</i>)	50
blomeri, <i>Discoloxia</i>	107		
borbonica, <i>Pelopidas</i>	86		
brassicae, <i>Pieris</i> ...	20, 21, 23, 26, 33, 34, 36, 45, 55, 85, 93, 95, 113, 122		

	PAGE
fagana, <i>Hylophila</i>	31
fagella, <i>Diurnea</i>	93
falcataria, <i>Drepana</i>	36, 48
ferrugalis, <i>Phlyctaenia</i>	6, 106
festucae, <i>Euchalcia</i> = <i>Plusia</i> ...	106
flaccidaria, <i>Scopula</i>	83
flammea, <i>Panolis</i>	7, 30, 44
flava ("sylvestris"), <i>Pamphila</i> 35, 37, 96	
flavicincta, <i>Polymixis</i> (Antitype, Polia)	32
flavicornis, <i>Polyploca</i>	29, 47
flaviventris, <i>Conopia</i>	52
fluxa, <i>Arenostola</i>	146
forficellus, <i>Schoenobius</i>	107
forficula, "Agrotis"	81
formicaeformis, <i>Conopia</i>	52
fuliginosa, <i>Phragmatobia</i>	106
fulvata, <i>Cidaria</i>	48
furva, <i>Dryobota</i>	81
fusca, <i>Salebria</i>	107
fuscalis, <i>Phlyctaenia</i>	107
galathea, <i>Melanargia</i> ... 24, 34, 37, 96, 123	
gamma, <i>Euchalcia</i> = <i>Plusia</i> 6, 32	
geminipuncta, <i>Nonagria</i>	31
gemmaria, <i>Boarmia</i>	21
gnoma, <i>Pheosia</i>	107
gothica, <i>Episema</i>	44, 93
gracilis, <i>Episema</i> (<i>Taeniocampa</i>) 44	
griseata, <i>Thera</i>	49
griseola, <i>Eilema</i>	30, 106
helice, <i>Colias croceus</i> f. ... 26, 28, 30, 37, 38, 45, 55, 106	
hexadactyla, <i>Orneodes</i>	50
hirtaria, <i>Lycia</i>	29
hispidaria, <i>Apocheima</i>	29, 44
hyale, <i>Colias</i>	31, 32, 35, 37, 45
hyperantus, <i>Epinephele</i> ... 25, 30, 35, 37, 41, 97	
icarus, <i>Lycaena</i> (<i>Polyommatus</i>) 5, 24, 26, 27, 34, 38, 47, 96, 123	
immutata, <i>Scopula</i>	106
incarnatella, <i>Plutella</i>	76
incerta, <i>Episema</i> (<i>Orthosia</i> , <i>Tae-</i> <i>niocampa</i>)	44
ines, <i>Melanargia</i>	57
io, <i>Vanessa</i> ... 20, 24, 26, 29, 31, 34, 35, 36, 37, 43, 45, 93	
iris, <i>Apatura</i>	8, 26, 30, 45
isogrammaria, <i>Eupithecia</i>	107
jacobaeae, <i>Tyria</i> (<i>Hipocrita</i>) 29, 30	
juniperata, <i>Thera</i>	47
iurtina, <i>Epinephele</i>	34, 37, 144
Kenya, Butterflies of	97
lacunana, <i>Argyroploce</i>	93
lancealis, <i>Perinephela</i>	107
lanestris, <i>Eriogaster</i>	29
lathonia, <i>Argynnis</i>	100
legatella, <i>Chesias</i>	32
leucophaearia, <i>Erannis</i>	28, 44
leucotera, <i>Cerura</i>	1
ligustri, <i>Craniophora</i>	106
ligustri, <i>Sphinx</i>	93, 107, 117

	PAGE
linariata, <i>Eupithecia</i>	107
lineata, <i>Celerio</i>	6
lineola, <i>Pamphila</i> ("Adopaea?") 35	
liturata, <i>Semiothisa</i>	107
lubricipeda, <i>Spilosoma</i> ... 30, 45, 93	
lucina, <i>Hamearis</i>	36
lundana, <i>Ancylis</i> : see <i>badiana</i>	
lurideola, <i>Eilema</i>	30
lutea, <i>Spilosoma</i>	4, 29
luxuriosa, <i>Apopestes</i>	87
machaon, <i>Papilio</i> ... 11, 36, 72, 85	
macularia, <i>Pseudopanthera</i> ...	29
maia, <i>Gyananisa</i>	101
malvae, <i>Hesperia</i>	25, 34, 36
margaritellus, <i>Crambus</i>	107
marginaria, <i>Erannis</i>	28, 44
medon (agestis = astrarche), <i>Lycaena</i> (<i>Polyommatus</i>) 34, 43	
megera, <i>Pararge</i> ... 21, 25, 27, 34, 35, 45, 93, 96	
mendica, <i>Diacrisia</i>	93
micacea, <i>Hydraecia</i>	31
minimus, <i>Cupido</i>	37, 123
miniosa, <i>Episema</i>	44, 93
monacha, <i>Lymantria</i>	106
monoglypha, <i>Parastichtis</i>	81
montanata, <i>Cidaria</i>	93
munda, <i>Episema</i> (<i>Taeniocampa</i>) 44	
nanata, <i>Eupithecia</i>	36, 107
napi, <i>Pieris</i> ... 8, 14, 20, 24, 29, 34, 36, 41, 93, 121	
nebulosa, <i>Polia</i>	21
neriaria, <i>Comibaena</i>	82
*nigra, <i>Cleora ribeata</i> ab.	9
nigrofulvata, <i>Semiothisa litur-</i> <i>ata</i> ab.	107
niveus, <i>Acentropus</i>	107
noctuella, <i>Nomophila</i> ... 28, 32, 106	
notha, <i>Brephos</i>	29
nubeculosa, <i>Brachionycha</i>	29
nymphaeata, <i>Hydrocampa</i>	76
obstipata, <i>Cidaria</i> (<i>Nycterosea</i>) 21, 22, 31, 32, 106	
ocellatus, <i>Smerinthus</i>	107
ochracea, <i>Ochria</i>	31
ochrearia, <i>Aspilates</i>	83
oditis, <i>Leucochlaena</i>	21
olympiaria, <i>Xenochlorodes</i> ...	82
opima, <i>Episema</i>	44
or. <i>Palimpsestis</i>	47
ornithopus, <i>Lithophane</i> (<i>Grap-</i> <i>tolitha</i>)	106
oxvacanthae, <i>Meganephria</i> ...	86
palaestinensis, <i>Amathes</i>	86
palaemon, <i>Cartocephalus</i> 30, 36	
pallens, <i>Leucania</i>	21
pamphilus, <i>Coenonympha</i> ... 34, 37, 81, 93, 111, 113	
pandora, <i>Argynnis</i> 13, 72, 105, 114	
paphia, <i>Argynnis</i> 8, 25, 30, 34, 35, 37, 55, 96, 123	
paphos, <i>Glaucopsyche</i>	86
papilionarius, <i>Hipparchus</i> 23, 36, 106	

	PAGE		PAGE
partheneas, Brephos	23	*rotunda, Pieris napi ab.	121
pastinum, Asticta (Toxocampa) ..	106	roxelana, Pararge	1, 85
pavonia-minor, Saturnia ...	29, 107	rubi, Callophrys	34, 123
pedaria, Phigalia	29, 44, 92	rubi, Macrothylacia	36
peltigera, Melicleptria (Helio- this)	6, 21, 30, 45	rubricosa, Cerastis	44
pennaria, Colotois	22, 32	rufa, Coenobia	106
permixtaria, Cidaria	83	ruficornis, Drymonia	15
phlaeas, Chrysophanus (Heodes) 13, 21, 26, 27, 28, 30, 31, 32, 34, 38, 41, 45, 93, 96, 97, 100,	123	rupicaprararia, Theria	44, 92
phoenissa, Euchloe cardamines	85	ruticilla, Spudaea	81
pilosaria: see pedaria		sacraria, Rhodometra ...	21, 28, 31, 32, 45, 107
pinastri, Sphinx (Hyloicus) ...	34, 123	*segarrai, Melanargia ines ...	57
pinarius, Bupalus	7, 30	salicis, Stilpnotia	106
pisi, Ceramica	106	sambucaria, Ourapteryx ...	45, 107
plantaginis, Nemeophila	125	satellitia: see transversa, Eup- silia	
plumaria, Selidosema	79	saucia, "Agrotis"	21, 24, 32
*plumbea, Eilema depressa ab.	9	selene, Argynnis ...	8, 21, 27, 30, 35, 36, 37, 96
podalirius, Papilio ...	73, 105, 113, 114	scotica, Thera	49
polychloros, Vanessa	66	semele, Satyrus	26, 37, 96
polycommata, Nothopteryx ...	29	senex, Comacla	106
pomedaxana, Argyroploce	52	"sibylla": see camilla	
populi, Poecilocampa	32, 92	similis: see chrysorrhoea	
populi, Smerinthus	29, 108	simplicaria, Dyscia	87
prasinana, Bena: see fagana, Hylophila		sinapis, Leucophasia ...	21, 26, 31, 36, 93
promissa, Catocala	44	sobrinata, Eupithecia	47, 107
pronuba, Noctua	21	socia, Lithophane	21
pruni, Thecla	34, 36, 41	solitaria, Thaumetopaea	86
pruniana, Argyroploce	93	sordidus, Heliophobus	106
psi, Hyboma (Acronycta)	93	sororeula, Eilema	29
pudibunda, Orgyia (Dasychira) 14, 93		sparganii, Nonagria	31
pudorina, Leucania	106	spheciformis, Conopia	52
pulchellata, Eupithecia	49	Sphinx, Brachionycha	22, 32
pulverea, Amathes	81	stabilis, Orthosia (Taeniocam- pa): see cerasi, Episema	
pumilata, Gymnoscelis	106	stagnata, Nymphula	107
punctidactyla, Platyptilia ...	107	stellatarum, Sesia (Macroglos- sum) ...	23, 28, 31, 32, 35, 37, 45, 67, 93, 95, 125
purpuralis, Pyrausta	93	stratarius, Biston	29
putrescens, Leucania	21, 86	strigillaria, Perconia	30
pygina, Arenostola	106	suffusa, "Agrotis"	21, 24
pyrina, Zeugera	107	sylvestris (sylvanus: "venata"), Pamphila	27, 34, 37, 93
quercetica, Eupithecia	82	sylvinus, Hepialus	7
quercifolia, Phylodesma (Gas- tropacha)	30, 107	syngrapha, Poly. coridon ab. ...	37
quercus, Thecla ...	26, 35, 37, 97, 123	syriaca, Hipparchia	85
ragusana, Eublemma (Porphy- rinia)	81	syriaca, Mannia oppositaria ..	83
rapae, Pieris ...	13, 14, 20, 23, 27, 28, 32, 33, 34, 36, 45, 93, 95, 113, 114	syriaca, Parastichtis monoglypha	81
rectilinea, Hyppa	76	syriacaria, S. ericetaria	87
*rectistrigaria, Pseudoterpna	81	syringaria, Phalaena	45
repandata, Boarmia	21	tages, Nisoniades ...	25, 34, 36, 93
rhamni, Gonepteryx ...	8, 20, 26, 29, 34, 35, 36, 92	temera, Euxoa	86
rhegmatica, Chesias	87	tenebrata, Panemeria	93
rhomboidaria, Boarmia ...	21, 107	testata, Lygris	30
*rhoumensis, Coenonympha pamphilus	111	terebinthi, Ocnertia	81
ridens, Polyplocia	29	tiliae, Mimas	93
roboraria, Boarmia	10, 30	tipuliformis, Conopia	52
		tithonus, Epinephele ...	24, 26, 35, 37, 97
		transversa, Eupsilia	21
		transversata, Philereame	107

	PAGE
tremula, Pheosia	107
trifolii, Scotogramma	31
trigeminata, Sterrha	106
trimacula, Drymonia	17
tripartita, Unca = Abrostola ...	93
*trypanaria, Hemerophila	83
turfosalis, Tholomiges	75
tusciaria, Crocallis	83
tyronensis, Selidosema plumaria	79
umbra, Pyrrhia	106
umbratica, Cucullia	106
urticae, Vanessa ... 8, 14, 24, 26,	
27, 29, 31, 34, 35, 36, 37, 43,	
	92, 96
vaccinii, Conistra	21
valerianata, Eupithecia	107
*varia, Ectropis crepuscularia	
ab.	10
*varia, Boarmia roboraria ab.	10
verbasci, Cucullia	81, 93
vespiformis, Conopia	52
vetusta, Calocampa	106
villica, Aretia	36, 125
viminalis, Bombycia	106
vinula, Cerura	37, 93
viridana, Tortrix	44
viriplaca (= dipsacea), Meliclep-	
tria	45
vitalbata, Horisme	107
w-album, Thecla	34, 41
xanthographa, Noctua	21, 107
xerampelina: see centrargo	
ypsilon, Parastichtis	106
zelleri, Pelopidas borbonica ...	86
ziezac, Notodonta	37
zonaria, Nyssia	49

MANTODEA.

fasciata, Empusa	11
heldreichi, Ameles	13
religiosa, Mantis	72, 73, 104

ODONATA.

elegans, Ischnura	114
fuscum, Sympetrum	114
meridionale, Sympetrum	114
splendens, Agrion	12

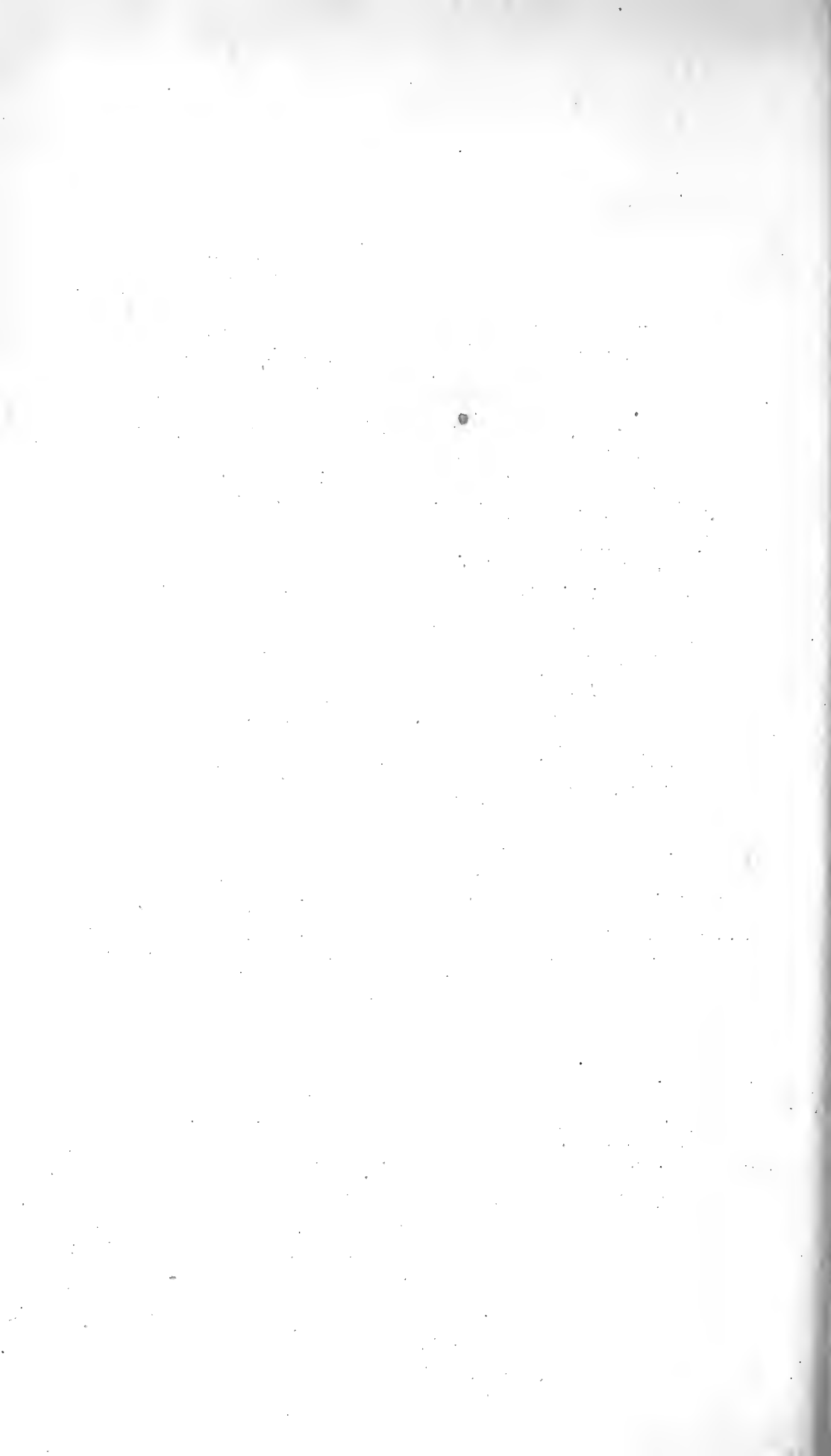
ORTHOPTERA.

aegyptium, Anacridium 14, 73,	113
anatolicus, Notastaurus	105

	PAGE
anatolicus, Pezotettix	104
Arachnocephalus sp.	113
aurea, Oedipoda 12, 13, 103, 104,	145
bicolor, Chortippus	105
biguttulus, Chortippus 104, 113,	114
brachyptera, Arcyptera	14
brevicollis, Doclostaurus	104
bucephala, Bucephaloptera 103,	104
caerulans, Sphingonotus	14, 73
caerulescens, Oedipoda ... 13, 72,	
	103, 105, 113, 114
chabrieri, Pholidoptera	73
depressum, Acrydium	13, 113
fischeri, Stenobothrus	13
fuscus, Conocephalus	73, 114
giornae, Pezotettix	113
graeca, Tropidopola longicornis	73
gratiosa, Oedipoda	73
incerta, Incertana	73, 103
insubricus, Acrotylus ... 11, 73,	113
intermedia, Platycleis	145
kheili, Arcyptera	14
lilifolia, Tylopsis	103
longicornis, Tropidopola	73
longipes, Acrotylus	114
magnifica, Drymadusa	12
meridionalis, Paratettix	112
migratoria solitaria, Locusta ..	73
miniata, Oedipoda	14, 72,
	104, 105, 114
nitidula, Homorocoryphus	114
patruelis, Acrotylus	14, 72, 73
pellucens, Oecanthus	143, 113
pentagrammica, Charora	105
plorans, Euprepocnemis	72, 73
quadripunctata, Phaneroptera	113
spectabilis, Drymadusa	12
strepens, Aiolopus 11, 14, 72, 73,	113
tenuicornis, Calliptamus ... 13,	145
thalassina, A.	73
Tridactylus sp.	11
turcius, Rhacocleis	143, 145
turrita, Acrida	113, 114
ventralis, Omocestus	113
viridissima, Tettigonia	104

RHYNCHOTA.

abietis, Chermes	90
ficus, Chermes	90
ficus, Homotoma	90
mali, Psylla	91



Phalaena Tortrix fasciana, Linn., *Faun. Suec.* (ed. ii), p. 342, No. 1304 (1791), is not a Noctuid, but a prior name of *Pammene juliana*, Curtis. (Eucosmidae).

See Durrant, *Ent. Rec.*, XXXII, 35-36 (1920).

Is *Pyralis hybnerana*, Fb. 1794, really a synonym of *venustula*? Werneburg identified it as *xylosteara*, with which description it does not agree. But Fb. says it is close to *hermanniana*, that is a syn. of *Uacoecia oporana*, Linn. It would seem to be a Tortricid. Fb. describes the wings in diagnosis as ashy (*cinereae*) but in description as flesh-coloured (*carneae*).

Erastria venustula, Hb.

Erastria, Ochs. (1826), most authors: [*Psilomonodes* Warr.-Stz. (1911)] *venustula*, Hb. (1787), *Beitr.*, II.

Hb., *Beitrage*, II (1787), 3, plt. 4, Z., p. 78, described and figured this species. He again figured it in his *Samml.*, 294 (1821), a very dark form.

Treit., *Schmett.*, V (3), 264 (1826), referred only to Hb., *Samml.*, 294, and to Hb., *Beitr.*, II, 3, plt. 4, Z., 78 (1787).

Dup., *Hist. Nat.*, Sup. III, 565, plt. 47, 5 (1836), gave an excellent typical figure of which he gave a very detailed minute description. He cited Hb. 294, and Hb., *Beitr.*, II, plt. 4, Z., p. 78.

Guenée, *Hist. Nat.*, 227 (1852), cited Hb., Treit., Steph., Curtis and Dup. His only note is that Steph.'s description of the larva does not agree with that of Treit.

Tutt, *Brit. Noct.*, IV, 4 (1892), dealt with this very invariable species and gave a long detailed description of the marking noting that the inner margin has the black features and at times has more or less emphasis developed.

South, *M.B.I.*, II, 59, plt. 21, f. 9 (1908), gave a very good figure of the "rosy marbled" *venustula*.

Hamp., *Lep. Phal. Noct.*, VIII, 493 (1909), cited *hybnerana*, Fb., and gave an unusually clear b. and w. figure of this mottled species.

Warren-Stz., *Palaeartic Noct.*, III, 215 (1911), plt. 45 i, gave a detailed list of the main features and position of the marbling indicating that the variation was a matter of slight increase and decrease in area, and of lighter or darker colouring. He gave two very nice figures.

Culot, *N. et G.*, I (2), 158, plt. 69, f. 2 (1916), gave an excellent figure.

Of the Variation Barrett said:—

Very constant in colour and markings, variation being shown only in the whiteness or pink shading of the ground colour.

Tutt gave a description of Hübner's figure and extracts from the writings of Stainton in the *Intel.* from the *Ent. Ann.* (1861) and from Newman in the *Zoologist*.

Names and Forms to be considered:—

venustula, Hb. (1787), 3, plt. 4, Z., p. 78.

hybnerana, Fb. (1794), *Ent. Sys. emend.*, III (2), 247. Syn.

The only Form to be discussed is:—

Pyralis hybnerana, Fab., *Ent. Syst.*, III, ii, 247, No. 27 (1794).

ORIGINAL DESCRIPTION—"Pyralis alis cinereis fusco maculatis lineolisque transversis nigris.

Habitat: Halae, Saxonum, Dom. Hybner.

Magna. Affinis videtur *P. Hermannianae*. Alae anticae carneae maculis plurimis, magnis, fuscis. Lineolae aliquot transversae, nigrae in disco alae. Apex terminatur puncto nigro. Posticae obscurae marginē exteriori albido.

Dom. Hybner Notarius Halensis Insectorum scrutator indefessus."

Erastria fasciana, L.

Erastria, Ochs. (1826), Gn., Meyr., South, Meyr., Culot: [*Hapalotis* Hb. (1821), South: *Lithacodia*, Hb. (1821), Warr.-Stz.: *Thalerastria*, Stdgr. (1898), Splr.], *fasciana*, L.

Ernst & Engram., *Pap. d'Eur.*, VI, 64, plt. 224, f. 319 a, b, c (1789), gave three figures of different forms but not of the typical form. *a* was an unusually marbled form with small irregular white marking, *b* all the markings were dark suffused greenish-grey, *c* was an underside.

Hufn., *Berl. Mag.*, III, No. 85 (1766), described this species under the name *pygarga*.

Rottem., *Naturf.*, IX, 136 (1776), repeated this description.

Schaeffer., *Icones*, II, plt. 179, figs. 4-5 (1769), figured an insect under the name *strigilis*, Fb. This figure is undoubtedly one of *fasciana* as pointed out by Gn., *Hist. Nat. Noct.*, II, 229. The shape, marking, colour, and especially attitude on the plate support this view. Panzer (1804) in his notes on the *Icones* gave Hb. 161, and Esp. 146, as representing this species as including *strigilis*, Fab., *fuscula*, Hb., with the *fasciana*, Linn.

Esper, *Abbild. Noct.*, IV, 470, plt. 146, 7 (1790-2), gave a poor figure of this species under the name *polygramma*. Wernbg. testified this as *fasciana*, L.

Bork., *Schm. Noct.*, IV, 175, placed it to his *praeduncula*, (Schiff.), which was *fasciana*.

Haw., *Lep. Brit.*, pt. II, 261 (1809), described this as a species under the name *albilinea*, a form of *fasciana*.

Hb., *Samml. Noct.*, fig. 297 (1800), gave a rather poor figure under the name *fuscula*. It is too large and very incorrect in marking and scarcely recognizable.

Tr., *Schmett. Noct.*, V (3) (1826), under the name *fuscula*, Hb., included in his Synonyms *praeduncula*, Bork. and *polygramma*, Esp.

Guen., *Hist. Nat.*, VI, 229 (1852), treated this species under the name *fuscula*, Schiff. His synonymy included *polygramma*, Esp., *strigilis*, Schaeff., *praeduncula*, Bork., and Ernst & Engram., 319 a, b, c.

Meyr., *Handbk.*, 166 (1895), used the genus *Erastria* in both his *Rev. Handbk.* editions (1928).

Stdgr., *Cat.*, 231 (1901), included ab. *guenéei*, Fall., and ab. *stygia*, Btlr.

Splr., *Schmett. Europ.*, I, 294, plt. 51, 44 (1907), gave a good typical figure. He included ab. *albolinea*, Haw., and described a new form *albomarginata*. He then gave the extensive area over which the species was spread in Western Asia. He then described ab. *guenéei*, Fall. and with the E. Asian *stygia*, Butlr., species.

South, *M.B.I.*, II, 57, plt. 21, 7 (1908), gave a very dark figure typically marked, and referred to ab. *albolinea*, Haw. He said the forewings were brownish-grey, but his figure was blackish.

Hamp., *Lep. Phal.*, X, 539 (1916), included *strigilis*, Schaeff., *fuscula*, Hb., *polygramma*, Bork., as synonyms. He recognized ab. *guenéei*, Fall. He considered *stygia* as a good species. He used the genus *Lithocodia*, Hb. (1821), as an "omnibus" genus with some 83 species.

Warr.-Stz., *Pal. Noct.*, III, 277, plt. 52b, gave two good figures; one typical *fasciana*, the second *albolinea*, Haw., and a third figure *stygia*, Butlr., which has been sometimes considered the E. Asian form of this species. The form *guenéei*, Fallou, S.W. France, suffused with rufous (nut-brown). The names *strigilis*, Schaeff., *fuscula*, Schiff., *polygramma*, Esp., and *praeduncula*, Btlr., were considered synonyms.

Culot, *N. et G.*, I (2), 158, plt. 69, 5 (1916), gave an excellent figure. He called attention to its resemblance to *Miana strigilis*, included ab. *guenéei*, Fall., fig. 6, and ab. *albomarginata*. The former was from the type in the Oberthür Collection.

The Forms and Names to be considered:—

fasciana, Linn. (1761), *Fn. Suec.*, 342.

pygarga, Hufn. (1766), *Berlin Mag.*, III, No. 85. Syn.

strigilis, Schaeff. (1769), *Icones*, II, plt. 179, 4-5. Syn.

polygramma, Esp. (1790+), *Abbild. Noct.*, IV, 470, plt. 146, f. 7. Syn.

praeduncula, Bork. (1792), *Schm. Noct.*, IV, 175. Syn.

ab. *albolinea*, Haw. (1909), *Lep. Brit.*, 261.

fuscula, Hb. (1821), ? *Samml. Noct.*, 297. Syn.

v. *guenéei*, Fall. (1864) [*Brit. Noct.*, Tutt, IV, 5].

sp. *stygia*, Btlr. (1878), *Ann. and Mag.*, (5), I, 199 (1878).

ab. *albomarginata*, Splr. (1907), *Schmett. Eur.*, I, 294.

ab. *sordida*, Hnnem (1917), *Int. Ent. Zt.*, X, 146.

Of the Variation Barrett said:—

Usually very constant in colour and markings. Among the insects from Haworth's collection now in the possession of Dr P. H. Mason, is one labelled *albolinea*, which is certainly an example of this species, having the usual white blotch, and the apical region grey, except a white line between the two parallel second lines.

Tutt, *Brit. Noct.*, IV, 5 (1892), dealt with (1) the typical form having massed white in the inner angle area; (2) ab. *albolinea*, Haw., in which the white mass is reduced in area, but lengthened to the apex of the forewing; and (3) ab. *guenéei*, Fallou, with the whole forewing suffused with clay-yellow with normal typical markings. Tutt remarked at considerable length on the misplacement of isolated captures of very aberrant forms such as the last.

Erastria stygia, Btlr., *Ann. Mag. N.H.* (Ser. 5), I, 199 (1878): *Ill. B.M.*, III, 20, plt. xlvii, 2.

Allied to *E. fuscula*: primaries black in the ♂, brown in the ♀, with darker bands and lines as in *E. fuscula*, the orbicular and reniform spots more or less strongly outlined in white; costa white-spotted, most strongly beyond the middle, a more or less strongly defined squamose patch of yellowish scales just beyond the reniform spot; a transverse bracket-like white line followed by a yellowish streak near the external angle; a 3-shaped pale line, bordered outwardly with deep black, near the base; fringe of all the wings white-spotted and with basal and central pale lines; secondaries shining greyish-brown. Wings below much as in *E. fuscula* but darker. Yokohama.

More nearly has the aspect of *E. africana*, Feld., and nearly approaches *Eriopus latreillii*, Dup.

The figure on plt. 52c, Seitz, III, strongly suggests a *fasciana* form.

ab. *albomarginata*, Splr., *Schmett. Europas*, I, 294 (1907).

ORIG. DESCRIP.—“Beyond the waved line on the outer side the white line may be widened and extended to the outer margin to form ab. *albomarginata*.”

ab. *sordida*, Hnnem, *Int. Ent. Zt.*, X, 146 (1917).

ORIG. DESCRIP.—“Lighter, suffused yellowish-grey, including the body and hindwings.”

Bankia argentula, Hb.

Bankia, Gn. (1841), Gn., Tutt [*Tortrix*, Schiff. (1775): *Pyralis*, Fab. (1794): *Eustrotia*, Hb. (1821), Meyr., South, Warr.-Stz., Meyr., Draudt-Stz.: *Erastria*, Ochs. (1826), Steph., Splr. South: *Hydrelia*, Gn. (1841)] *olivana*, Schiff. (*argentula*).

Treit., *Smett*, V (3), 255 (1826), referred to Bork., IV, 798 (1792); Esper, IV, 559, plt. 163, 3, as *argentula* = *bankiana*, Hb. (1793); Hb., *Samml. Noct.*, 292, under the name *olivea*; Hb., *Beitr.*, II, 9, *argentula*; Fab., *Ent. Syst.*, III (2), 262, as a Pyralid *bankiana*; De Vill., *Ent. Linn.*, II, 404, as a *Tortrix*, *bankiana*. [Fr. quoted Esp.'s fig. wrong; Wrbng. quoted fig. 3, which is correct.]

Hb., *Beitr.*, I (2), fig. F (1787-9), described and gave a figure, which did not quite agree. The ground was said to be olive-green and to be quite pale. But in the figure is not so. The marking is correctly described and figured.

Bork., *Noct.*, IV, 788 (1792), cited Hb., *Beitr.*, Lang, *Verz.*, and *Scriba's Jrn.*, pt. 2, p. 131 (1790).

Esper, *Abbild. Noct.*, III, 559, plt. 163, 3 (1790), gave a very poor figure under the name *argentula* (teste Wernbg.).

Schiff., *Verz.*, 128, *Tortrices*. B., *Tort. Metallicae* (1775) described and named this species *olivana*, "olive-green with two silvery streaks."

Illiger, *Verz.* (2nd and revised edition), II, 39 (1801), cited *Tort.*, *P. bankiana*, Fab., *N. argentula*, Bork., *argentula*, Esp., and Hb. (*Beitr.*).

Dup., *Hist. Nat.*, VII (1), 373, plt. 123, 3 (1827), gave an excellent figure, *argentula*. He cited Bork., Esper and Lang, *Noct. argentula*; Hb., *Noct.*, *olivea*; De Vill., *Tort.*, *bankiana*, Fab., *Pyr. bankiana*.

Hb., *Samml. Noct.*, 292 (1821), gave a very good typical figure under the name *olivea*.

Steph., *Ill.*, III, 117 (1830), under the name *Erastria bankiana*, Fb., gave a very clear description of what is called *argentula*.

Gn., *Hist. Nat.*, VI, 231 (1852), described it under the name *Bankia argentula*. He cited Esp., Bork., Hb., Lang, and Dup., IV, 373, and gave *Pyralis bankiana* as a syn.

Meyr., *Handb.*, 166 (1895), used the genus *Eustrotia* and cited *bankiana*, Fb.

Meyr., *Revised Hbk.* (1928), *l.c.*

Stdgr., *Cat.*, 230 (1901), under the name *argentula* cited *olivea* and *bankiana* as syns., and gave *argentula* as a var.

Splr., *Schm. Eur.*, I, 292, plt. LI, 36 (1907), gave a very good figure, cited the *obsoleta*, Tutt, and the *amurula*, Stdgr., and referred to the lines of aberration.

Hamp., *Lep. Phal. Noct.*, X, 586 (1910), dealt with *argentula*, Hb. (1787), under the name *olivana*, Schiff. (1775). He cited *bankiana*, Esp.; *argentula*, Hb.; *olivea*, Hb.; *amurula*, Stdgr.; *albitescens*, Schultz., and *confluens*, Schultz. He recognized only *amurula* as an aberration.

South, *M.B.I.*, II, 59, plt. 21, f. 4 (1908), gave an excellent figure of the typical form, *argentula*. He referred to the Irish form being sometimes tinged with red. He also included the far Eastern Siberian form *amurula*, a brownish form.

Warr.-Stz., *Pal. Noct.*, III, 280, plt. 52 e (1912), described the species under the name *olivana*, Schiff. (1775). He cited *bankiana*, Fab., and *argentula*, Hb., as syns., and gave a good typical figure. The forewings were described as pale olive-brown, sometimes sprinkled with darker brown, the markings shining-white edged with blackish. The Forms included were *amurula*, Stdgr., *rufescens*, Tutt, and *obsoleta*, Tutt. He also reported the more recent forms noted by Schultz, *oblitescens* and *confluens*. Warr. comments on this very local species occurring over such a vast area from Britain to the Amur.

Culot, *N. et G.*, I (2), 157, plt. 68, f. 47 (1915), gave an excellent figure, *argentula* (*bankiana*, Fb. = *olivea*, Hb.). He discussed the variation.

Drdt.-Stz., *Pal. Noct. Supp.*, III, 207 (1935), added the following aberrations: *nigrosparsata*, Ostheld., transverse lines suffused dark; *nowickia*, Schilles, darker; *funeraria*, Pegl., still darker; and describes two new forms, *albescens*, "vastly" different from the type, and *uniformis* with all markings obliterated. He gave three new figs., plt. 23 b.

The Names and Forms to be considered:

olivana, Schiff. (1775), *Verz. (Tort.)*, 126, B. 1.

bankiana, Fb. (1781), *Sp. Ins.*, II, 275. Syn.

argentula, Hb. (1787), *Beitr.*, I (2), 9. Syn.

olivea, Hb. (1821), *Samml. Noct.*, 292. Syn.

rufescens, Tutt (1892), *Br. Noct.*, IV, 7.

obsoleta, Tutt (1892), *l.c.*

amurula, Stdgr. (1892), *Mem. Rom.*, VI, 562.

ab. *oblitescens*, Schultz (1907), *Ent. Zt.*, XXI, 78.

ab. *confluens*, Schultz (1907), *l.c.*

ab. *nowickii* (1923), *Polsk. Pisms.*, II, 109.

ab. *nigrosparsata*, Osthelder (1927), *Schm. Sud-Bay*, II (2), 346, plt.

XVI, 15.

ab. *funeraria*, Drdt.-Stz. (1935), *Pal. Noct. Sup.*, III, 207.

ab. *uniformis*, Drdt.-Stz. (1935), *l.c.*

ab. *albescens*, Drdt.-Stz. (1935), *l.c.* (Pegler *in lit.*).

Tutt gave the description of *argentula* from Hb.'s *Beitrage* and made a short survey of the possible variation. He referred to ground colour of the forewings, the stigmata, the transverse lines, etc., in colour and shape. Tutt gave two aberrations, a reddish form *rufescens* and *obsoleta* with transverse lines nearly absent.

Of the Variation Barrett said:

Hardly variable except that the ground colour of specimens from Ireland seems to be of a yellowish-brown tinge.

ab. *amurula*, Stdgr., *Mem. Rom.*, VI, 562 (1892).

DESCRIP.—Warr.-Stz., *Pal. Noct.*, III, 28 = Rather smaller than typical *olivana* and darker brown. Amur district.

ab. *oblitescens*, Schultz, *Ent. Zeit.*, XXI, 78 (1907).

ORIGINAL DESCRIP.—"The two white transverse lines may be reduced in width, often they are very narrow and become almost streak-like. This may be called ab. *obliterans*."

ab. *confluens*, Schultz, *Ent. Zeit.*, XXI, 78 (1907).

FIGS.—*l.c.*, A, B, C. In A a, streak of white joined the two transverse ones forming the letter H; in B the upper half of the interspace was filled with white; in C the whole of the interspace was filled up white forming a solid wide white band.

ab. *nowickii*, Schilles, *Polsh. Pisms.*, 2, 109 (1923).

DESCRIP.—Drdt., *Pal. Noct. Supp.*, 207 (1935), is only blackish yellow-brown in basal and central areas, marginal area glossy white as on the transverse bands, only dusted with blackish-brown between the veins. Poland.

olivana, Schiff., *Verz.*, 126, B. 1, *Tortrices* (1775).

ORIG. DESCRIP.—“Olive-green with two silver streaks.”

Of this Illiger, *Verz. Wien*, 2, p. 39 (1801), said it was the *argentula*, Bork., Esp., and Hb., and the *bankiana*, Fb.

ab. *bankiana*, Fab., *Spec. Insect.*, II, 275 (1781), *Pyralis*.

ORIG. DESCRIP.—“*Alis fuscis, fasciis duabus niveis; posteriore unidentata, Magna. Alae anticae fuscae nitidae litura baseos fascisque duabus obliquis niveis, posteriore majore quae versus anteriora dentem emittit. Alae posticae cinereae.*”

ab. *nigrosparsata*, Osthldr., *Schm. Sud-Bay*, II (2), 346 (1927).

FIG.—*l.c.*, plt. XVI, 15, good. b. and w. fig.

ORIG. DESCRIP.—“I have specimens in which the silvery bands are strongly overspread with black.” (The author gives a figure of ab. *obsoleta*, Tutt, 14.)

P.S.—Is omitted in the text but corrected on the plate.

ab. *albescens*, Drdt., *Pal. Noct. Supp.*, III, 207 (1935).

FIG.—*l.c.*, 23 b.

ORIG. DESCRIP.—“Differs vastly from type. Basal and marginal thirds are almost pure white, so that the silvery white transverse lines almost disappear therein and only an oblique pale brownish central band remains.” Aksu.

ab. *uniformis*, Drdt., *Pal. Noct. Supp.*, III, 207 (1935).

FIG.—*l.c.*, plt. 23 b.

ORIG. DESCRIP.—“In which all markings become invisible, except for a very fine white subapical oblique streak and indications of a whitish submarginal line. Aksu.

ab. *funeraria*, Drdt. (Pegler *in. lit.*), III, 207 (1935).

FIG.—*l.c.*, plt. 23 b.

ORIGINAL DESCRIP.—“Darker than *nowickii*: specimens in which the silvery-white stripes appear leaden black from the olive-brown ground colour, or even are completely obliterated.”

Hydrelia uncula, Clerck.

Hydrelia, Gn. (1841), Dup., Hamps. [*Eustrotia*, Hb. (1821), Hamps., Warr.-Stz., Drdt.; *Erastria*, Hb. (1821), Culot; *Phytometra*, Gn. (1841)], *uncula*, Clerck. (1789) (*unca*, Schiff.).

Hufn., *Berlin Mag.*, III, 396, No. 67 (1766), described this species under the name *singularis*. There was no reference to it in the article by von Rottem in *Naturf.*, Vol. IX (1776).

Linn., *Fn. Suec.*, p. 342, No. 1305 (1761), described this species as a *Tortrix* and named it *uncana*.

Schiff., *Verz.*, p. 91, Y. 4 (1775), referred to the *Geo. unca*, L., under the name *unca*, treating it as a *Noctua*. Illiger, *Verz. Wien*, p. 342 (1801), cited *Pyralis unca*, Fln. & Panz., and the *unca*, Bork. & Esp. He confirmed it as the *G. unca*, L.

Esper, *Abbild. Noct.*, IV, 580, plt. 164, f. 7 (1793), gave a good recognisable figure: named *unca*.

Bork., *Scriba Mg.*, II, 152, plt. X, 7 (1791), gave a figure of a very good typical form under the name *uncana*. He cited *Geo. unca*, L.; *Pyral. unca*, Fb., IV. *unca*, Schiff.

Ernst and Engram., *Pap. de Eur.*, VIII, p. 111, fig. 591 a, b, c (1793) gave three very good figures, and underside. They cited Bork., Hb., Linn., de Vill., etc.

Haw., *Lep. Brit.*, II, 262 (1809), described this species under the name *unca* and placed it in the genus *Phytometra*, and cited Hb., Fab., Linn., etc.

Hb., *Samml. Noct.*, 293 (1821), gave a very good typical figure: *unca*.

Treit., *Schmett.*, V (3), 253 (1826), dealt with the species under the name *unca*. He referred to Hb., *Samml. Noct.*, 293, name *unca*; Hb., *Beitr.*, II, plt. 4, Z, p. 56; Schiff., *Verz.*, 91, as *unca*; Linn., *S. Nat.*, 875, as a Geometer, *uncana*, and again *Fn. Su.*, ed. II, 1, as *Tortrix unca*; Esp., IV, 580, plt. 164, 7, as *Tort. unca*; Hufn., *Berl. Mag.*, III, Nos. 67 and 68 (in Rott.), 396 as *Ph. singularis*, with Fab. as *Pyr. unca*.

Dup., *Hist. Nat.*, VII (1), 379, plt. 123, 4 (1827), gave an excellent figure, *unca*. He gave references to Schiff., *Verz.*; Treit., *Schmett.*; Linn., *Geo. unca*; Fab., *Pyralis unca*, Hufn. *singularis*, and Scriba, *Noct. unca*.

Gn., *Hist. Nat.*, VI, 235 (1852), called it *unca*, L. He cited Fb. calling it a *Pyrale*. He called it a *Phytometra*, and referred to Ernst and Engram., *Pap. de Eur.*, 584, a, b, c.

Splr., *Schm. Europas*, I, 293, plt. 51, 17 (1907), described a darker form as ab. *obscurior*, and said that vein IV occurred rarely between the orbicular and reniform stigmata.

South, *M.B.I.*, II, 58, plt. 21, f. 5 (1908), gave an excellent figure: *uncula*.

Hamp., *Lep. Phal. Noct.*, X, 578, fig. 161 (1910), cited *uncana*, L., and *unca*, Schiff. as Syns. The figure b. w. was curiously marked with strong and dark lines to the large bands forming the hook. He used the 1759 name of Clerck's figure, *unca*.

Warr.-Stz., *Pal. Noct.*, III, 280, plt. 52 e (1912), gave a good typical figure; *uncula*, Cl. He cited *uncana*, L.; and *unca*, Schiff., as Syns. The only ab. given was the ab. *obscurior*, Splr.

Culot, *N. et G.*, I (2), 157, plt. 68, 18 (1915), gave an excellent figure: *uncula*, *unca*.

Drdt., *Pal. Noct. Supp.*, III, 207 (1935), reported the ab. *lineola*, Dnhl.

The Names and Forms to be considered :

- uncula*, Clerck (1759), *Icones*, plt. 3, f. 7.
singularis, Hufn. (1766), *Berl. Mag.*, III, 396, No. 67. Syn.
uncana, Linn. (1761), *Fn. S.* Syn. (*Tort.*).
unca; Schiff. (1775), *Verz.*, 91, Y. Syn. (*Pyrallis*).
ab. obscurior, Splr. (1907), *Schm. Eur.*, I, 293.
ab. lineola, Dnhl. (1926), *Ent. Zeit.*, XL, 14.
ab. rufotincta, Kolb. (1930), *Mitt. Münch. Ent. Gesel.*, XX, 62.
ab. clarivittata, Nordstr., *Sven. Fjarl.*, 200 (1940).

Of the Variation Barrett said :

Usually not variable; but there is at the Museum at Carlisle a specimen believed to have been captured in the neighbourhood by Mr C. Earles, in which the pale costal stripe is supplemented by another equally broad, joined to it for three-fourths of its length, occupying the middle portion of the wing from the base and throwing out a long spur toward the hind margin; in the middle of the wing is a spot of the darker ground colour. So far as I know this variation is unique.

Tutt gave a description of Clerck's type figure (1759) and discussed the variation among specimens he had seen.

singularis, Hufn., *Berl. Mag.*, III, 396, No. 67 (1766).

ORIG. DESCRIP.—“Rotlich braun, theils heller, theils mit einem blas fleisch-farbenen sehr gebogenen haken.” [Goeze, *Beytr.*, III (3), 494, No. 24].

ab. obscurior, Splr., *Schm. Eur.*, I, 293 (1907).

ORIG. DESCRIP.—The size and shape of the reniform stigma somewhat varied, the ground colour suffused very heavily red-brown, also the inner marginal streak darker, with other usually lighter marking somewhat brownish toned.

ab. lineola, Dnhl., *Ent. Zeit.*, XL, 14 (1926).

DESCRIP.—*Drdt.*, *Seitz. Supp.*, III, 207 (1935)—“ In which the outer of the two white lines, forming the white outer marginal stripe, is suffused with brown dusting, so that only the inner fine silvery white line is left.” S. Tyrol. Upper Bavarian Moor.

ab. rufotincta, Kolb., *Mitt. Münch. Ent. Ges.*, XX, 62 (1930).

ORIG. DESCRIP.—“Among the series of this species only in those of the Bavarian States and near areas do forms of reddish colour occur. Many were found in the South Tyrol, of the same form, and it can be concluded to be a definite form.”

ab. clarivittata, Nordstr., *Sven. Fjarl.*, 200 (1940).

ORIG. DESCRIP.—“ With the transverse line and the waved line in place of having wide edges united together to form a light band.” Sweden.

ABROSTOLA, Ochs.

In this genus, which is closely allied to *Plusia* (*Phytometra*, Haw.) are contained three European species, two of which are British, *triplasia*, L., and *tripartita*, Hufn. The third species, very close to *triplasia*, is *asclepiadis*, Schiff., rare in Europe, but common in the far East and Japan.

There seems to have been the utmost confusion regarding these two species from the time of Linn. (1758), whose description was so defective that it denoted both species. On the Continent the confusion was (and is) greater from the inclusion of a third species (rare and local), viz., *asclepiadis*. Every author seemed to differ from every other in his ideas of the relationship of these insects. Careful breeding of long series of each in this country would no doubt give definite results which could be analysed.

Abrostola triplasia, Linn.

Abrostola, Ochs. (1826) [most authors], and Mey., 2 [and *abrostola*, Ochs. (Gn. emend. 1852), Splr., Barr. *Plusia*, Treit. (1826), Meyr., 1].

Linn. in his *Sys. Nat.*, 517 (1758) cited Merian, de Geer and Rösel for figures of *triplasia*, but in his *Fn. Suec.* (1761) he cited only de Geer (*Insect.*, plt. 6) for *triplasia* (mis-spelled *triplacia*), a very different figure from the exquisite one of Rösel, which was a typical dark form with characteristic marbling, while the de Geer figure with similar marking is pale grey, the only dark and prominent markings are the large black central blotch, the two small apical marks, and the very large white patches on the thorax are indicative of the other closely allied species, *tripartita*, which for years was held as a form of *triplasia*.

Linn., *Sys. Nat.*, Xed., *Phal. Noct.* (1758), described it thus: "P. Noct. spirilinguis, alis deflexis, superioribus arcu duplici contrario maculisque tribus glaucis intermediis.

Tutt did not note this but gave instead the amplified description in the *Faun. Suec.* of Linn. (1761).

Although the *S.N.* by Linn. was inadequate it was based on the good unmistakable figure in Rösel's *Ins. Belust.*, I (2), plt. 31 (1746+).

Schiff., *Verz.*, 91, Y.1 (1795), Messel-Erele.

Illiger, *Verz.*, 30, Y. (1) (1801), cited Fb., Bork., Esp.

Esp., *Abbild. Noct.*, IV, 612, plt. 169, f. 1, 4, 5 (1790+), gave three figures: 1 as *triplasia*, L., and 4 and 5 as var. *asclepioidea* (p. 616). These are very poor illustrations.

Wernbg., *Beitr.*, II, 49 (1864), said all were *triplasia*. He renamed 1 *trigemina*, and 4, 5 as the form *urticae*, Tr., of *triplasia*, L.

Bork., *Schmet. Noct.*, IV, 755 (1792), cited *Sys. Nat.*, XIIed. (1767); Fab., *Sys. Ent.*, II, (1781); de Vill., *Ent. Linn.*; Schiff., *Verz.*, (1775); Hufn., *Berlin Mag.*, III (1766); de Geer, *Insectes* (178?); Rösel, *Ins. Belust.* (1746?); Goeze, *Ent. Beytr.*, III (3) (1781), etc.

Ernst & Engr., *Pap. d'Eur.*, VIII, 105, f. 578 a, b, c, d (1793), gave two figures of the very dark typical western form and referred to this as a very common species with ♂ and ♀ exactly alike and the variation almost nil. They cited over 30 references (before 1793).

Sepp., *Ins. Ned.*, I, 79, plt. XXIV (1762), gave three figures of the dark form, so typical in all western areas. Two of these were with closed wings in the normal resting position.

Hb., *Samml. Noct.*, fig. 626 (1814-7), gave a good figure named *triplasia*. He had already figured this species in (1800-3), No. 269, very dark, especially the hindwings; an extreme of the typical form.

Treit., *Schmett.*, V (3), cited 29 references of the species under the name *triplasia*. The *Fn. Suec.* of Linn. has a misprint "*triplacia*." In his text he discusses the association of *urticae* and *asclepiadis*. The figures Treit. cites are those of Hb., Esper, Ernst & Engram., Rösel.

Treit., *Schmet. Eup.*, V (3), 138 (1826), gave a long description of *triplasia*, both larva and imago. He cited the important authors included in Bork.'s work, and added: Hb. (figs., larvae, etc.); Schiff., *Verz.*, and Illig., *Verz.* (1801); Esper, *Abb. Noct.*, IV (1790?); Ernst & Engr., *P. de E.*, VIII (1793); Fuessl, *Ins. Schwz.*; Hufn.; View; Goeze; Bork., etc.

Dup., *Hist. Nat.*, VII, 486, plt. 132, 1 (1827), gave a good figure of the dark typical form of the West European habitat. The Central European examples are dark, but they are distinguished by being extremely slightly lighter appearance.

Gn., *Histoire Nat.*, VI, 323 (1852), said that although the description of Linn. was quite inadequate the citation of Rösel's figure sufficed, but that some authors continued to confuse it with *urticae*, which was equally common as *triplasia*.

Stdgr., *Cat.*, IIIed., 235 (1901), recorded his var. ab. *clarissa* introduced in *Iris.*, XII, 381 (1899), "multo dilutior, grisescens."

Hamp., *Lep. Phal.*, XIII, 587, f. 128 (1913), gave a figure (b. & w.) by no means dark. He recorded its extensive habitat in China, Tokio, Siberia, etc.

Splr., *Schm. Eur.*, I, 298, plt. 49, 15 (1907), gave a very dark typically marked form of which the author said had the thorax and base of the forewings too dark, also the spot beyond the inner-angle towards the vicinity of the outer transverse line.

South, *M.B.I.*, II, 73, plt. 22, 2 (1908), gave a very good figure of a dark British form of which I have a good bred series. The variation is extremely slight. They are doubtless the typical form. All specimens I have from the centre of Europe are considerably lighter as are many figures in published works of *clarissa* Stdgr.

Pierce, *Gent. Noct.*, 78, plt. 30 (1909). "Harpe peaked, the costal edge bulged out, more peaked than *tripartita*; clasper curled at the tip; clavus peaked, uncus sickle formed; aedoeagus terminating at the orifice with a scobinated process, on one side, and a curved hook or possibly a bulbed cornutus on the other; vesica with a mass of large and small spines."

Warr.-Stz., *Pal. Noct.*, III, 388, plt. 65 k (1913), dealt very briefly with the *Abrostola*. The var. *clarissa*, Stdgr., was noted, as well as the raised scales on the very black marking. The figure is dark but not so dark as our British form, yet not grey, and contrasts well with the only figure of *tripartita* beside it on the plate.

Culot, *N. et G.*, I (2), p. 164, plt. 70, 7 (1916). In *triplasia* the length of the medial space between the extrabasal line and the elbowed line in its narrowest place is about a millimetre wider than in *asclepiadis*. The yellowish basal portion is more clearly trilobed in *triplasia*. The extra basal and elbowed lines are more largely margined with ferruginous than in *triplasia*. In *triplasia* the elbowed line, a little be-

fore reaching the interior border, makes a more distinct angle outwardly, so that, from the tip of this angle, this line runs more oblique as regards the base of the wing set out to meet the inner border. While in *asclepiadis*, of which we have just spoken, it is very open and the lower part of the elbowed line is nearly perpendicular upon the inner margin.

Of the two *Abrostola* Barrett remarked:

We have but two species readily discriminated by (1) ground colour of the forewings silvery-grey = *tripartita*; (2) ground colour of the forewings yellow-brown = *triplasia*.

Of the Variation Barrett said:

Hardly variable, except that its colours are rather darkened in north-western districts.

Tutt, in his dealing with *triplasia* in *Brit. Noct.*, quotes the *Orig. Descrip.* of both the *Sys. Nat.* and of the *Fn. Suec.* as a single one, but he does not use any of the references given with them.

In the *Fn. Suec.* it will be noted that different references are cited, one being a figure from de Geer, *Ins.*, pl. 6, f. 20-21.

Race *clarissa*, Stdgr., *Iris*, XII, 381 (1899).

ORIG. DESCRIP.—This very striking, light form of *triplasia* is before me in three specimens (2 ♂s and 1 ♀) from Amasia, a ♂ from Mardin (N. Mesopotamia), a ♀ from Eibes (S.E. Taurus), and 2 ♂s from Jerusalem. The forewings of this var. *clarissa* are light (instead of dark grey-black in *triplasia*). The basal part is (as the thorax) quite light yellow-brownish or isabellie colour (a not too strongly marked colour); the outer area is similar, more or less mixed with light grey, while the prevailing light grey middle area carries three distinctly lighter stigmata. The transverse lines like the three little black streaks in the apical part stand out sharply. The hindwings, like all the other parts of the body, are less dark, particularly apparent is this the case in the light yellow-grey abdomen.

Hamp., *Cat. Lep. Ph.*, XIII, 588 (1913). Much paler and greyer. Asia Minor. Syria.

Abrostola tripartita, Hufn.

Barrett described this species under the Names *urticae*, Hb.; *tripartita*, Stdgr.!

Hufn., *Berlin Mag.*, III, 288, No. 31 (1766), described it as *triplasia*. "Bräunlichgrau, an der Einlenkung der Flügel bräunlichgelb; an dem Innenrande den gleichen Fleck mit einem krummen Strick darübes." [Goeze, III (B).]

Rottemb., *Naturf.*, IX, 139, No. 95 (1776), in his treatment of the work of Hufn., said that this description was that of *tripartita* which was a form of *triplasia* and not a species as Hufn. had considered it.

Dup., in his description, gave the following points of difference from *triplasia*:

"(1) The blotch at the base and the dentate line of the outer part of the wing are of a greenish yellow or colour of sulphur, instead of being fawn.

(2) The larger of the two transverse lines is less curved and runs down at right angles to the inner margin.

(3) The ground of the two ordinary stigmata is much clearer and is a little like the base in colour.

(4) One sees only two small black spots forming an angle at the apex of the forewing in place of three black lines.

(5) Finally, the thorax is of a violet-grey in place of being the colour of dead wood."

Dupon., *Hist. Nat.*, VII, (1), 491, plt. 132, f. 2 (1827), described it, and figured it under the name *urticae*, Hb. (Dup. did not recognize Hufn. as was customary in the early part of the last century.)

Spuler, *Schm. Eur.*, I, 298, plt. 49, fig. 17 (1907), gave an excellent figure. He said that the name was given from a character of the larva.

South, *M.B.I.*, II, 4, plt. 22, 3 (1908), gave this comparison with *triplasia*. This species, known also as *urticae*, Hb., has the basal and outer marginal areas of the forewings whitish-grey finely mottled with darker grey. The central area is greenish-brown mottled with darker brown. The spectacle mark in front of the thorax is whitish-grey ringed with black and the raised scales on the cross lines and the central area of the forewings are more distinct in this species. The figure was quite good.

Pierce, *Génit. Noct.*, I, 78, plt. 30 (1909), "Harpe peaked, the costal edge being broadly bulged out, without corona; clasper a straight arm; clavus produced and peaked; uncus sickle form; aedoeagus with a double toothed process at the orifice; vesica with a mass of slender teeth."

Warr.-Stz., *Pal. Noct.*, III, 358, plt. 65 k (1911), gave the following diagnosis: "Distinguished from *triplasia* by the whitish-grey basal area, the less distinct submarginal line, black-edged at apex, and by the oblique, elongate stigma becoming confluent into a transverse blotch, the mark on vein 2; the pale markings have something of a greenish tinge; but frequently the pale scaling is obscured by dark suffusion = ab. *urticae*, Hb.

Culot, N. *et* G., I (2), 165, plt. 70, fig. 9 (1916), gave an excellent figure and distinguished this species as follows: "*Tripartita*, Hufn. (*urticae*, Hb. = *asclepiadis*, Esp. = *triplasia*, Hb. Easily distinguished from the two previous species by its light basal and submarginal areas which are of a very clear whitish-grey often of a green tint. Sometimes, however, these light spaces are very darkened, but are never ochraceous as *triplasia* and *asclepiadis*. On the other hand in *tripartita* the black anti-apical spot is much more emphasized than in the other two species."

Drdt.-Stz., *Pal. Noct. Supp.*, III, 223 (1936). The illustration in Vol. III, plt. 65 k, of *triplasia* form *clarissa* does not belong here but to *asclepiadis*, p. 359, plt. 65 k."

Of the Variation Barrett said:

Usually not variable, but a specimen in the collection of Mr W. H. B. Fletcher has the ground colour as shown near the base and the under part of the forewing, dark steely-grey, and Mr J. Gardiner possesses one in which the forewings are of a curious unicolorous slate-brown, except that portions usually pale are shining slate-grey.

Of the Variation of the larva Barrett said:

"A variety, having the same pattern of markings, has the ground-colour bright reddish purple with pinkish cream-coloured markings in place of the yellow and white; the oblique lateral stripes and the 3-dorsal blotches are rich deep brown. All the legs are used in walking, in repose the fifth and sixth segments are arched and the anal segment raised (C. Fenn)."

Plusia moneta, Fb.

Plusia, Ochs. & Treit. (1816-25) [Most Authors; *Phytometra*, Haw. (1809), Warr.-Stz.: *Deva*, Smith (1896): *Chrysoptera*, Latr. (1825), Hamp.] *moneta*, Fb.

Esper, *Abbild. Noct.*, IV, 218, plt. cxii, fig. 1 (1792?), described the figure on the plate, which he had labelled *flavago*, under the name *argyritis*. In 1864 Wernb. said it represented *moneta*. The figure is certainly not *flavago*, which has differently shaped wings, and has no silvery or golden marking: quite obviously not *flavago*.

Hb., *Beitr.*, I, pt. 3, plt. x, R. p. 22 (1788), gave a very dark ♀ figure. He gave a full description, commenting on its similarity to *chrysitis*, a species well figured by Schäffer, *Abb. Regen. Ins.*, pt. 1, plt. 101. Hb., *Samml.*, 189. Treit. cited this with the remark "eigenthelk," in his opinion Treit. citation of 289 for *moneta* was correct. Hb. (773-775). These figures were added by Geyer in (1832-3) after the death of Hb. The 3 figures are darker than Hb. 289.

Ernst. & Engram, *Pap. d'Eur.*, VII, 158 (1792), when dealing with the *ochracea*, Schiff. = *flavago* of Hb. and of Sepp., cited Esper IV, 218, plt. 112, figs. 2, 3, and 4, copied from Sepp. He (Esper's) fig. 1 on the same plate, which he has taken for the male is the *Noct. moneta*, which we shall give later. In Vol. VIII, *Pap. d'Eur.*, fig. 1 of Esper, was cited as *moneta*, p. 116, f. 884.

Treit., *Schmett.*, V (3), 158 (1826), for this species cited Hb. 289, *Beitr.*, I, pt. 3, plt. iii, P. p. 22; Fab., *Esper.*, Bork, etc. He records that de Vill. in *Ent. Linn.*, IV, 474, introduced *moneta* as a new species. I note that his description is copied from the *Mantissa* of Fab.

Dup., *Hist. Nat.*, VII (2), 36, plt. 139, f. 2 (1829), cited *ecu*, Ernst. & Ingram, f. 884, Fab., *Esp.*, Ochs., etc. The figure was the dark form. He said that this species was very rare in France.

Frr., *Beitr.*, II, 77, plt. 71 (1829), gave one of the best figures I have seen of this species. The author has been supplied by his friends with both larvae and imagines, and he has given the full life-history written by one of his friends, Herr Stadtdecan.

Gn., *Hist. Nat.*, VI, 332 (1852), gave no description of his own and in fact his remarks were very meagre. He cited the figure by Hb., Dup., Freyer, *Esp.*, de Vill. and Ingram, but did not note that *flavago* was an error of the plate legend.

In 1896 Smith described this species as new to the American Fauna under the name *trabea*. He described it in *Ent. News*. It occurred in Canada and the adjoining area of N. America.

P. trabea, Smith, *Ent. News*, VII, 29 (1896), described the *esmeralda* form of *moneta* as a new American species. cf. Dyar's *Cat.*, p. 198 (1902).

Stdgr., *Cat.*, 235 (1901), cites Hb., *Beitr.*, Haeger, Frr., Treit., Speyer, Schroder, etc. He recorded var. *esmeralda* (multo pallidior al. ant, pr. p. argenteis).

South, *M.B.I.*, II, 64, plt. 22, f. 4 (1908), gave a good figure. He discussed its History and Distribution.

Splr., *Schm. Eur.*, I, 300, plt. 49, f. 20 (1907), dealt mainly with the distribution and its gradual spread. He included a var. et "ab.", the *esmeralda*, Obthr. The figure is a lighter example but with only a suggestion of silvery suffusion.

Hamp., *Lep. Phal.*, XIII, 444 (1913), described it and recognized only the var. *esmeralda*, Obthr. He cited *napella*, de Vill., *argyritis*, *Esp.*, and *trabea*, Smith. Hampson actually cited the plate error of *Esp.* as a Syn., although it is one of the most obvious ever made and corrected shortly afterwards by *Esper* himself and subsequent authors.

Warr.-Stz., *Pal. Noct.*, III, plt. 65 i, ♂ and ♀ (1913) with syns. *argyritis* and *napella*, and wrongly referred to the name *flavago*. ab. *esmeralda*, 65 i, with its syn. *trabea*. They add *marginata*, Warr., 65 i-Stz., cream-white, and the typical figure. The four figures are representative as to marking, but the metallic coloration is absent.

Culot, *N. et G.*, I (2), 166, plt. 70, 12 ♀ (1916), gave the best figure I have seen of the dark ♀.

Of the Variation Barrett said:

Not variable, except a little in the degree of dull gold suffusion over the forewings.

Tutt, *Brit. Noct.*, 20 (1892), said a great deal about the then recent appearance of this species in Britain, hardly touches on the Variation, but gave the description of *esmeralda*, Obthr., as well as that of the type form, Fab., *Mantissa* (1789).

The Forms and Names to be considered:

moneta, Fab. (1787), *Mant.*, 162.

napella, de Vill. (1789), *Linn. Ent.*, II, 275. Syn.

flavago, Esp. (1792) ? *Abbild. Noct.*, IV, 218, plt. 112, 1. Error.

argyritis, Esp. (1792) ? *l.c.* Syn.

ab. *esmeralda*, Obthr. (1880), *Et.*, V (1), 88.

trabea, Smith (1896), *Ent. News*, VII, 29.

ab. *margarita*, Warr.-Stz. (1913), *Pal. Noct.*, III, 358, plt. 65 i.

napella, de Vill., *Linn. Ent.*, II, 275 (1789).

FIG.—*l.c.*, plt. 5, f. 21.

ORIG. DESCRIP.—“*Alis lutescentibus, lunulis punctisque argenteis.*”
“*Thorax tripliciter cristanus, crista media bifida. Alae superiores lutescentes, strigis duabus, inferiori angulata. In mediis alae duae lunulae argenteae intra quas puncta tria argentea posita sunt. Alae omnes subtus atomis fuscis adpersae.*”

ab. *margarita*, Warr.-Stz., *Pal. Noct.*, III, 358, plt. 65 i (1913).

FIG.—*l.c.*, plt. 65 i, a very good figure.

ORIG. DESCRIP.—“*Is cream-white with a silvery sheen, without any brown suffusion, the lines more or less obsolete, but traceable like the stigmata, in certain lights; hindwing whitish with brown veins, and slightly discoloured towards the termen.*”

race *trabea*, Smith, *Ent. News*, VII, 29 (1896).

FIG.—“*Moth Book*,” Holland, plt. xxviii, 12 (1903).

ORIG. DESCRIP.—“*Ground colour pale whitish-grey, overlaid by ochreous, golden and silver scales. Head and thorax pale, scales and hair are black and brown tipped. Tuftings prominent, vestiture entirely loose and divergent. Wings mottled, difficult to describe, all the ordinary markings present. Basal space more or less silvery, crossed by a yellow-brown basal line, rather evenly outcurved, and margined both sides with yellowish-brown. T. p. line geminate, the included space silvery-gilt, defining brown lines distinct. Parallel to outer margin but incurved between veins and irregular or angulated. A brown median shade line through middle of wing.*” Alberta, Assiniboia.

Holland's fig. 12, plt. xxviii, *Moth Book* (1903) is not good. The description and figure agree neither with *esmeralda* nor with *margarita*, but seem nearer the typical form.

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Esp., *Abbild. Noct.*, IV, 186, plt. cix, f. 1-5 (1790?), gave 3 unsatisfactory figures. He gave a very full description of the species, its larva, life-history and variation and an epitome of the writings of many previous authors.

Linn., *Sys. Nat.*, XII (1767); Müller, *Ueberf.* (1774); Ray, *Hist. Ins.* (1710); Geoffroy, *Hist. des Ins.*, II (1762); Albin, *Hist. of Ins.* (1720); de Geer, *Mem.*, II (1782); Scopoli, *Ent. Carn.* (1763); Schiff., *Verz.* (1775); Fuessly, *Sweiz. Ins.* (1775); Fab., *Syst. Ent.* (1775); Müller, *Faun. Fred.* (1764); Hufn., *Berl. Mag.*, III (1766).

Goeze, *Sys. Nat. du Regm. An.*, III (6) (1781); Jung, *Verz.* (1781?); Lang., *Verz.* (1782); Sepp., *Nederl. Ins.* (1785); Rott., *Naturf.*, IX (1766); ditto, VI, X; Schaeff., *Icones*, CI (1769).

Ernst. & Engram, *Pap. d'Eur.*, VIII, 122, 19, 588, *c.*, *d.*, *e.*, *f.* (1793). All good: *c.* is a *juncta* form with the lower half of the central arc filled with the greenish-gold. *e.* is another *juncta* form with a very slight arm of the metallic colour crossing the central area about the middle, and outer transverse metallic band extended outward, partly separated by a narrow dark line. *f.* a *disjuncta* form with silvery bands, the outer one well divided and the inner not meeting either costa or inner margin. *d.* an underside. Unusual forms.

Hb., *Samml. Noct.*, f. 272 (—1803), 672-3 (—1822), gave very good figures; the former has two fasciae united by a strong streak. ♀, the latter, 672, has a wide ground space between the two bands (the outer edge of the outer band is very irregular). ♂, 673, is an underside.

Treit., *Schmett.*, V (3), 169 (1826), cited more than thirty works of authors previous to his own work. The following had figures: Madam Merian, *Eur. Schmett.*, I, plt. 59 (1730); Sepp, *Neederland Vlinder*, I, 7, plt. I, 7-12 (1762); *Naturf.*, VI, 79, plt. III, 5-6 (1775); Esp., *Abbild. Noct.*, IV, 186, plt. 109, 1 (1790?); Ernst. et Engram, *Pap. d'Eur.*, VIII, 122, f. 588 (1793); Donovan, *Nat. Hist.*, IV, plt. 137 (1905); Hb., *Samml. Noct.*, 272 (—1803), 622-3 (—1822). Donovan's figure is a beautiful *juncta* with only costal area of central band remaining.

Dup., *Hist. Nat.*, VII (2), 21, plt. 134, f. 3, 4 (1829), cited Mad. Merian, *Pap. d'Eur.*, plt. 59; Ernst. & Engram, *Pap. d'Eur.*, VIII, f. 588; Fuess., Schrank, Vieweg, Lang, *Berl. Mag.*, Hufn., *Naturf.*, Rott, Goeze, Müller, Brahm, Scopoli, and all other authors cited by Treit. The figures were very good representations of the forms *juncta*, Tutt, and *disjuncta*, Schultz, but wrongly labelled ♂ and ♀ forms. There is no sexual dimorphism.

Frr., *Beitrag*e, III, 129, plt. lxxxix (1829), gave a good figure with six pages of description and life history. The figure was a *disjuncta* form, dark brown ground.

Gn., *Hist. Nat.*, VI, 335 (1852), cited Albin, de Geer, Geoff., Scop., Sepp., Schaeff., Schiff. *Verz.*, Z.2, Fab., Esp. Don., Bork., Brahm, Haw., Hb., Tr., Dup., Bdv., Steph., Ernst. & Engram and a short description.

Meyr., *Handb.*, 156 (1895) used the genus name *Plusia*. In the *Revised Hbk.*, p. 181 (1927), he also used *Plusia*.

South, *M.B.I.*, II, 65, plt. 22, 5, 6 (1908), gave two good figures; 5 is typical and 6 is ab. *juncta*, Tutt. He also refers to ab. *nadeja*, Obthr.

Splr., *Schmett. Eur.*, 301, plt. 49, f. 26 (1907), gave a good figure of the typical form and dealt with the forms *aurea*, Hne., the golden form, ab. *juncta*, Tutt, var. *nadeja*, Obthr. On p. 366, Splr. dealt with combinations of *disjuncta*, *disjuncta aurea* and *disjuncta scintillans*, Schultz, which combinations he discussed at length, pointing out that such became synonyms.

Warr.-Stz., *Pal. Noct.*, III, 348, plt. 64 e., f. (1913), gave 5 figures, typical *chrysitis*, L., *juncta*, Tutt, *aurea*, Huene, *disjuncta*, Schultz, and *scintillans* Schultz; *nadeja*, Obthr., 64 f., was dealt with as a species and 2 specimens in the Tring Museum were associated with the above under the name *stenochrysis*, Warr. (64 f. figured).

Culot, *Noct. et G.*, I (2), 169, plt. 71, 1 (1916), gave a typical figure, not the dark western form, but the somewhat paler Central European colour, rather too stiff. He speaks of the variation of the metallic colour, recognised the ab. *juncta*, Tutt, as the commonest form of marking.

Drdt., *Pal. Noct. Supp.*, III, 221, reported 4 new forms: *decorata*, DhnI., *rosea*, Kaucki, *croesus*, Bryk., and *splendidior*, Fdz.

Of the Variation Barrett said:

Variable in the colour of the golden bands, irrespective of sex, from brilliant gold or even brassy-gold colour to a rather dull green-gold; but there is reason to believe that the shade of colour changes during life from damp or other causes from the brilliant to the green-gold. Except in the separation or junction of the two bands there is little other variation.

Tutt dealt with the typical form described by Linn. and discussed shortly the lines of variation and named the common alternative form with the two golden bands joined ab. *juncta*.

The Forms and Names to be discussed:

- chrysitis*, L. (1758), *Sys. Nat.*, Xth, 513 [F. Suec., 311].
- ? *nadeja*, Obthr. (1880), *Et.*, V, 85, plt. 3, f. 10.
- ab. *juncta*, Tutt (1892), *Brit. Noct.*, IV, 25.
- ab. *disjuncta*, Schultz (1900), *Ill. Zeit. Ent.*, V, 349.
- ab. *aurea*, Huene (1907), *Int. Ent. Zeit.*, I, 32 [Schultz].
- ab. *scintillans*, Schultz (1907), *l.c.*
- ab. *disjuncta-aurea*, Splr. (1907), *Schmett. Eur.*, I, 301, 366, plt. 49, 26?
- r. *croesus*, Bryk. (1923), *Ent. Tidskr.*, XLIV, 116.
- ab. *splendidior*, Fernend (1929), *Mem. Soc. Ent. Espn. Nat. Hist.*, XV, 598.
- ab. *rosea*, Kauck. (1929), *Polsk-Pismo.*, VII, 185 [Stz., *l.c.*, 221].
- ab. *decorata*, Dubl. (1933), *Ent. Zeit.*, XLVII, 20.
- ab. *disjuncta-scintillans*, Lempke (1934), *Ent. Ber.*, IX, 33.

race *nadeja*, Obthr., *Et. Ent.*, V, 84.

[Hamp., *Cat. Lep. Ph.*, XIII, 579 (1913). Forewings with the bands brilliant gold, and conjoined by a broad fascia in submedian interspace. The bands broader and the postmedial band extending to the tornus. E. Siberia; Japan.]

FIG.—*l.c.*, plt. III, 10.

ORIG. DESCRIP.—“ At least as handsome as *chrysitis*, near which this species ought to be placed. Much smaller than *chrysitis*; wings of the same shade as in the variety of *chrysitis* where the two metallic green bands are united at the middle. A line of golden-yellow spots, subterminal, straight across the brilliant green blotch towards its extremity. The brilliant green extends nearer the base and farther towards the terminal border than in any variety of *chrysitis*. Head and collar clear yellow. Hairs on the thorax brown and the epidorsal ones brown and not yellowish as in *chrysitis*. Beneath as in *chrysitis*. I. of Askold.”

ab. *disjuncta*, Schultz, *Ill. Zeit. Ent.*, V, 349 (1900).

ORIG. DESCRIP.—“ Duabus vittis alarum anticarum metallicis, non inter se conjunctis, sed disjunctis.” The metallic shining cross bands are completely separated from one another.”

Hamp., *Cat. Lep. Ph.*, XIII, 579 (1913). Forewing with the bands brilliant metallic gold.

ab. *aurea* (Huene), Schultz, *Int. Ent. Zeit.*, I, 32 (1907).

ORIG. DESCRIP.—“ The metallic cross bands are shining golden-yellow. The bands united.”

ab. *scintillans*, Schultz, *Int. Ent. Zeit.*, I, 32 (1907).

ORIG. DESCRIP.—“ Pallidior, griseo-flavescens, al. ant. fasciis argenteo-caeruleis (confluentibus).” “ This is distinguished from the typical and the other aberrations at the first glance by a distinctive gloss on the metallic spot of the forewing. While the metallic cross bands in the other forms appear golden or brassy coloured, the metallic coloured parts of the forewing in the new form are coloured silver-blue; the metallic gloss approaches in sparkling to that of the related species *P. zosimi*. The metallic bands are united to one another in all the specimens so far known to me.”

Hamp., *Cat. Lep. Ph.*, XIII, 579 (1913). Paler; forewing with the bands silvery blue.

ab. *croesus*, Bryk., *Ent. Tidskr.*, XLIV, 116 (1923).

DESCRIP.—Stz., *Pal. Noct. Supp.*, III, 221 (1933), “ Denotes a Swedish specimen with golden macula at end of cell.”

ab. *splendidior*, Ferndz., *Mem. Soc. Espn. Hist. Nat.*, XV, 598 (1929).

DESCRIP.—Stz., *Pal. Noct. Supp.*, III, 221 (1936), “Is of much more lively coloration, the metallic green is of quite extraordinary intensity. The outer line that edges the green band is strongly undulate, the brown median band is deeper scarlet-brown. Hindwings darker, subterminal that expands at anal angle completely absent. Salamanca.”

ab. *decorata*, Dnhl., *Ent. Zt.*, XLVII, 20 (1933).

DESCRIP.—*Pal. Noct. Supp.*, III, 221 (1936), "Is an aberration in which the metallic sheen is so extensive that the inner marginal patch of the ground colour is almost completely extinct. Bolyana and Rome." Drdt.

ab. *decorata*, Dnhl., *Ent. Zeits.*, XLVII, 20 (1934).

ORIG. DESCRIP.—"This aberration is so well marked by the increase of the (red) gold that the front of the brown central band of the ab. *juncta*, Tutt, has almost wholly engulfed the rest of the spots lying around."

ab. *disjuncta-scintillans*, Lempke, *Ent. Ber.*, IX, 33 (1924).

ORIG. DESCRIP.—"The two bands disunited and blue-green in colour."

ab. *rosea*, Kauck., *Polsk. Pismo.*, I, VII, 185 (1929).

DESCRIP.—*Stz., Pal. Noct. Supp.*, III, 221 (1936), "Denominates a specimen from Poland that is suffused with rose." Drdt.

Plusia chryson, Esp.

Plusia, Ochs. & Treit. (1826), most authors [*Phytometra*, Haw. (1809)], *chryson*, Esp.

Fab., *Syst. Ent.*, 607 (1775), under the name *orichalcea* gave the following description:—"Alis deflexis fuscis, macula magna lunata." Of this Bork. said (IV, 765), "The outer band of the metallic spot has the outer edge parallel to the margin of the wing, forming a lunulate or similarly-shaped edge."

This description is most inadequate for *chryson* and is now considered to point to another species and not to *chryson* as evidently so considered by Bork.

Bork., *Eur. Schmett.*, IV, 764 (1792), gave a short account of *orichalcea*, Fab., of which he cited the *Systema Ent.*, p. 607 (1775). *Spec. Ins.*, II, 227 (1781); *Mantissa*, II, 161 (1789). Also Hb., *Beitr.*, II (1787); Goeze, III (3), 233 (1781), all *orichalcea*, and Esper, *Abbild. Noct.*, III, plt. 141, *chryson*.

Bork., *l.c.*, 765, there dealt with *chryson*, Esp., as a separate species and cited a possible connection with Esper, *l.c.*, plt. 110, 6, p. 203.

Treit., *Schmett. Eur.*, VIII (3), 173 (1826), used the name *orichalcea*, Fab., but referred to *chryson*, Esp., and cited Bork., Hb., Ernst. & Ingram, Göze, and Harris, "Eng. Ins."

Dup., *Hist. Nat.*, VII (2), 18, plt. 135, 1 (1829), gave a good figure under the name *orichalcea*.

H.-S., *Sys. Bearb.*, II, 398 (1843-56), still used the name *orichalcea*, Fab., and merely included *chryson*, Esp., as an "antique." He noted that the figure of Hb. was "not good."

Gn., *Hist. Nat. Noct.*, II, 336 (1852), accepted the name *orichalcea* and cited *chryson*, Esp.; *aerifera*, Sowerby and Ernst & Ingram.

South, *M.B.I.*, II, 66, plt. 24, 1 (1908), gave a very good figure. The inner and outer sides of the spot are unusually irregular.

Meyr., *Handbk.*, 157 (1895), treated *chryson* under the name *orichalcea*. In the *Revised Hbk.*, 181 (1927), he changed to *chryson*.

Stdgr., *Cat.*, IIInd Edn., 126, No. 1775 (1871), was the first to list *chryson* as a species with *orichalcea* as a subsidiary name. In the two previous Lists, Heydenreich's (1851) and Stdgr.'s 1st Edn. (1861), the reverse was the case. *l.c.* In IIInd Edn. Stdgr. added, "certo mihi alia esse sp. videtur; nec enim descriptio nec patria quadrat."

Splr., *Schmett. Eur.*, I, 202, plt. 49, 33 (1907), gave a very good figure, a large ♀.

South, *M.B.I.*, II, 66, plt. 24, 1 (1908), gave a very good figure with a golden sometimes green-tinged patch.

Hamp., *l.c.*, 586 (1913), dealt with *orichalcea*, Fb., as a true sp. and cited *chrysitina*, Martyn; *aurifera*, Hb., 463; Frr., *Neue. Beitr.*, plt. 509; he gave half a page of Eastern localities.

Hamp., *Cat. Phal. Noct.*, XIII, 576 (1913), cited the *orichalcea* of many old authors; *aerifera*, Sowerby; and gave the description of a form from Corea. This was subsequently named *coreae*, Strand (1916).

Warr.-Stz., *Pal. Noct.*, III, 348, plt. 64 e (1913), gave a good figure, but in most specimens and figures the inner line is very indistinct whereas in the type figure of Esper it shows the portion from the blotch to the inner margin is quite distinct and clear. They said it is *orichalcea*, Hb. (not of Fab.); it is the *aerifera*, Sowerby.

Culot, *N. et G.*, I (2), 170, plt. 71, 4 (1911), gave an excellent figure of the typical form; no description.

Drdt.-Stz., *Pal. Noct. Supp.*, III, 221, recorded r. *coreae*, Strand, with the golden spot greenish, from Corea; and ab. *euporia* Dnhl., from S. Tyrol (Terlan), very dark with extended gold spot.

Tutt dealt with the typical *chryson*, Esp., and discussed the name and use of the term *orichalcea* in the Appendix, *B. Noct.*, IV, 128.

The Names and Forms to be considered:

chryson, Esp. (1789), *Abbild. Noct.*, IV, 447, plt. 141, 2.

orichalcea, Fb. (1775), *Sys. Ent.*, 607. Syn. sp.

aerifera, Sowerby (1803), *P.M.*, plt. 25. Syn. sp.?

r. *coreae* (Hamp.?), Strnd. (1916), *Arch. Nat.*, LXXXII, D. 2, 56.

ab. *euporia*, Dnhl. (1933), *Ent. Zeit.*, XLVIII, 20.

ab. *pales*, Müll. (19).

ab. *euporia*, Dnhl., *Ent. Zeit.*, XLVIII, 20 (1933).

ORIG. DESCRIP.—"In regard to the 'Contribution to the Southern Tyrol Fauna' (*Ent. Zt.*, XXXIX) form the autumn brood described, p. 101, by me which regularly appears in the southern valleys I give them a distinguishing mark. My sp. is a worn example from Bogue = *euporia*.

ab. *coreae* (Hamp., 1913) Strand, *Arch. Nat.*, LXXXII, A. 2, 56 (1916).

ORIG. DESCRIP.—"Forewings with the gold patch tinged with green and not extending to the submarginal lines." Corea.

Plusia bractea, Fab.

Plusia, Tr. (1826), most authors [*Phytometra*, Haw. (1809) *bractea*, Fab. (1787).

bractea, Schiff., *Verz.*, 92 (1775). See *Append.*, 314.

ORIG. DESCIP.—“Fam. Z. with 12 claspers. Semigeometrid larva. Noct. metallic purple-brown, golden-spot.” A rather meagre description, which seems to have been missed or refused by most authors, including Tutt.

Illiger & Haefeli revised *Verz.*, Schiff. (1801), placed it in its correct place between 2-3 *chrysitis* and *interrogationis*, p. (92) = 347. Z.

Esp., *Abbild. Noct.*, IV, 397, Plt. CX, 1-2 (1789?), gave 2 figures as ♂ and ♀ but poor and indistinct. They were attested by Wernebg. The outer transverse line is very distinct on its marginal portion. Esp. cited the *Mant.*, Fab., II, 161 (1787); Schiff., *Verz.* (1775), 314, plt. 5 f.w. He referred to the similar figure of *chryson*, plt. CXL.

Bork., *Schmett. Noct.*, IV, 775 (1792), cited Fab., *Mant.*; de Vill.; Schiff., *Verz.*; Goeze, *Beitr.*, III (3), 225.

Ernst & Engm., *Pap. d'Eur.*, VIII, 127, fig. 590 a., b., c., d. ((1793). They gave 2 upper and 2 undersides. 590 a. and 590 c. were excellent figures. The authors cited: Schiff., *Verz.*; Gmelin, I, v, p. 2555; Fab.; Goeze, III (3), 283; de Vill., etc.

Hb., *Samml. Noct.*, 279 (1800-3), gave a very good figure. H.-S., II, 397, said, “kennt-lich,” the hindwings were too yellow.

Dup., *Hist. Nat.*, VII (2), 26, plt. 134, 1 (1829). The metallic spot was silvery and so was the outer marginal band. There was no gold. The gold of the other three species on the plate was present, well developed. The text refers to the spot as of pale gold. He cites *securis*, de Vill.; Ernst & Engram.; Schiff., etc.

Treit., *Schmett. Noct.*, V (3), 176 (1826), cited Ernst. & Engram, p. 126; de Vill., II, 271; Bork., IV, 775; Schiff., 92, 314; Fab., III (2), 78; Esper., IV, 197. plt. CX; Illiger, 547; Hb., 279.

Frr., *Neu. Beitr.*, I, 91, plt. 47, 3 (1833), gave a figure in which the gold spot was unusually large.

Gn., *Hist. Nat.*, VI, 336 (1852), cited Ernst. & Engram, *Pap. d'Eur.*, VIII, f. 590, a., b., c., d.; Eversmann, 334; Schiff., *Verz.*, 314; Esp., etc.

Meyr., *Handb.*, 157 (1895), used the genus *Plusia*, and again in the *Revised Handb.*, 182 (1928 = 7).

Stdgr., *Cat.*, Ed. III, 137 (1901) gave the authority (S.V.) Fab., *Mant.* He gave no syn. and did not cite de Vill., in fact appears suppressed.

South, *M.B.I.*, II, 67, plt. 24, f. 2 (1908), gave a very good figure, but the gold spot was too pale, more like ab. *argentea*.

Hamp., *Lep. Phal.*, XIII, 551 (1913), cited Schiff. for the type form description (1775). Tutt and most authors had cited Fab., *Mant.* (1787). Also *securis*, de Vill., and described an aberrational form but did not name it.

Warr.-Stz., *Pal. Noct.*, III, 347, plt. 64 i (1913), treated *securis* de Vill. as a syn. The figure was a good general one but the gold spot was not developed as in the usual shape.

Culot, *N. et G.*, I (2), 170, plt. 71, 5 (1916), gave an excellent figure with a pale golden spot. He figures a specimen under the name *exuba*, Krisch., with a new species in which the ground colour is a beautiful rosy tint with the spot brilliant golden colour. He says that it may be only a local form, from Manchuria.

Drdt., *Pal. Noct. Supp.*, III, 221 (1930), includes the ab. *bracteana* (Hamp.) Strand, and records the ab. *argentea*, Gronem., with a silver in place of a gold spot.

Of the Variation Barrett said:

Hardly ever variable, but in the collection at Hayton Park, Liverpool, are two of which the shape of the gold spot is altered into an irregular rhomboid. (VI, III.)

Tutt, *Brit. Noct.*, IV, 26 (1892), dealt with the description by Fab., *Mantissa*, II, 161 (1787), and made a few remarks on the group *Plusia* and the local occurrence of this species.

The Forms and Names to be considered:

bractea, Fab. (1787), *Mant.*, 161.

securis, de Vill. (1789), *Linn. Ent.*, II, 171, plt. 5 f. 10. Syn.

ab. *bracteana* (Hamp., 1913) Strand. (1916) (Hamp., VIII, 551),
XXXII, Strand., *Arch. N. et G.*, 2596 (1916).

ab. *argentea*, Gronem. (1933), Drdt. (1933), *Pal. Noct. Supp.*, III, 221.

ab. *argentea-maculata*, Vorbr. (1911), *Schmett. Schweiz.*, I, 422.

ab. *securis*, de Vill., *Linn. Entom.*, II, 271, plt. v, f. 10 (1789).

FIG.—Plt. v, f. 10, *l.c.*, iv.

ORIG. DESCRIP.—“*Alis incumbentibus brunneis, securi aurata in medio. Palpi rubri, collare rubrum. Alae superiores brunneae, macula aurata securi formi in medio cum congenere aureo unita. Certo situ alae medium flavum. Margo posticus griseo nitidus. Subtus alae superiores rubro tinctae inferiores luteae. Pectus rubrum.*”

In Vol. IV, p. 473, de Vill. changed *securis* for the *bractea*, Schiff., and cited *Verz.*, Schiff.; Wernbg. agreed with this in his *Beitr.* (1864).

ab. *bracteana*, Strand., *Arch. Natg.*, LXXXII, A. 2596 (1916) [Hamp., *Lep. Phal.*, XIII, 551 (1913)].

ORIG. DESCRIP.—“Forewing with the stigma slightly produced at the lower extremity ” (Hamp.).

ab. *argentea*, Gronemann.

DESCRIP.—Drdt., *Pal. Noct. Supp.*, III, 221 (1913), “a silvery spot instead of a gold spot.”

ab. *argentea-maculata*, Vorbr. & M.-R., *Schm. Schw.*, I, 222 (1911).

ORIG. DESCRIP.—“Very rarely do fresh examples have silver instead of golden spots. It is very rarely fresh examples are observed, nearly every example met with is faded and worn.”

Plusia festuca, Linn.

Plusia, Treit. (1916-26), most authors [*Phytometra*, Haw. (1809); Warr.-Stz., *Pal. Noct.*, III (1913), recent authors] *festucae*, Linn., *Sys. Nat.* (1758).

Esper, *Abbild. Noct.*, IV, 231, plt. CXIII, 6 (1789+), gave a figure identified by Wernbg. as *festucae* (my figure has deteriorated). He cited Linn., *Sys. Nat.*, XIIed., 845 (1767), and gave the descriptions from there and the *Fauna Suec.*, 311 (1761); Fab., *Spe. Ent.*; de Vill.; Schiff.; Hufn., III, 214, with short description; Goeze; the two Müllers, etc.

Ernst & Engram., *Pap. d'Eur.*, VIII, 585 c, d, e, f, p. 117 (1793). In c the silvery colouration predominates on to the ground of the forewings; in e the ground colour has an amount of golden shading. They cited Linn., XII; Schiff. 92.Z; and 33 other works, including Merian, Geoffroy, Albin, Scopoli, Fuessly, Schrank, Schaeffer, Brahm, Fabricius (3), Sepp, various Lists, etc.

Donovan, *Nat. Hist. Br. Ins.*, II, 46 (1793), gave an excellent figure of a well-marked specimen.

Hb. *Samml. Noct.*, 277 (1902), gave a good figure, but there was no suggestion of any golden flush.

Treit., *Schmett. Noct.*, IV (3), 165 (1826), cited Hb.; Schiff. *Verz.*, Z.1; Illig., *N. Ausg.*, 345, 1; Linn., *S. Nat.*, 845 (1767); Fab.; Esp., IV, 113; Bork.; Vieweg, II, 45; Hufn.; Goeze, III (3), 127; Panzer, *Enum.*, VIII, 19; Kleemann; Wilkes; Esp., CXIII, 6; Ernst & Engram., VIII, 585; Donovan, II, 46; de Geer, etc.

Dup., *Hist. Nat.*, VII (2), 30, plt. 135, f. 4 (1829), gave a figure in which the pale silvery markings were very weak, but the apex, inner margin basal part of the costa and a partial submarginal band are brilliantly gilded.

Steph., *Ill.*, III, 107 (1830), said "It varies a little in colour, and in the form and size of the golden spots on the anterior wings." Found in marshy districts inhabiting the meadows in the vicinity of Rotherhithe; the Surrey canal near Greenwich, Woolwich, etc., also the ditches of Battersea fields.

Frr., *Beitr.*, III, 18, plt. 100 (1829), gave a figure showing both upper and under side. The former had all the markings usually silvery strongly golden of usual area. The underside had the central markings silvery, the broad apical blotch and the marginal band were golden, not strong but weakening to faint at apex of inner margin. The hindwing was pale with a very strong network of black veining.

Gn., *Hist. Nat.*, VI, 337 (1852), made this remark, "I have seen a specimen from N. America which differs in no respect." He cited Albin; Kleemann (conten. of Rösel), plt. 30, f. A (a very beautiful figure, with bright silver spots, the whole of the rest of the forewings extensively mottled with gold, Hy.J.T.); Schiff.; Treit.; Donovan, II; Dup.; Engr., VIII, 585; Steph., etc.

Splr., *Schmett. Eur.*, I, 302, plt. 49, 30 (1907), did not treat the far East form as a separate species but treated the American *putnami* as a form of *festucae*. The figure is a good typical form.

South, *M.B.I.*, II, 68, plt. 24, f. 3-4 (1908), gave two very good figures with the central markings very clear and distinct; 4 is a dark ground, 3 is a lighter golden-brown ground. He refers to an example, in which these spots are not united into one patch.

Warr.-Stz., *Pal. Noct.*, III, 347, plt. 64 c (1913), does not give a good figure, marking and colour not distinct and sharp enough. No form is reported and no Syn.

Hamp., *Lep. Phal.*, XIII, 507 (1913), added an aberration subsequently named *festucella* by Strand (1916). The golden spots below the cell were confluent. He cited Esp., *Abbild. Noct.*, IV, plt. 113; Hb. 277; Dup., VII (2), plt. 135; Frr., *Beitr.*, plt. 100.

Culot, *N. et G.*, I (2), 171, plt. 71, f. 8 (1916), gave a very good figure with normal light central markings with the ground moderately marked with a medium amount of dull golden suffusion.

Of the Variation Barrett said:—

Usually not variable, but Mr W. H. B. Fletcher has examples of a rich pale chestnut colour devoid of darker shading; sometimes also the two gold spots are separated only by a faint line. Some years ago I saw in Liverpool some unusual forms which had been reared in autumn from larvae found near Warrington. Of these some had the pair of gold spots quite joined together, while others in which they were separate, had the first spot of double the normal breadth. Some variation in this direction seems also to occur in Ireland.

Tutt dealt very casually with *festucae* quoting the short inadequate description of Linn. and the record from Gn. of the specimens received from America.

The Names and Forms to be considered:—

festucae, Linn. (1758), *Sys. Nat.*, Xed., 513.

ssp. *putnami*, Grote (1873), *Bull. Buff. Soc.*, I, 146, 193.

ab. *coalescens*, Schultze (1905), *Ent. Zt.*, XIX, 86?

ab. *miniana*, Schultze (1905), *l.c.*

marisola, Krulik (1908), *Soc. Ent.*, XXIII, 11. Syn.

festucella (Hamp.) (1913), Strand (1916), *Arch. Natg.*, 4, XXXII, A 2, 48. Syn.

ssp. *splendida*, Rang. (1935), *Ent. Rund.*, LIII, 22.

ssp. *maroccana*, Rungs. (1937), *Bull. Soc. Ent. Maroc.*, XVI, 213.

putnami, Grote, described a Noctuid under this name in the *Bull. Buffalo Soc.*, Vol. I, 193. Holland gave a figure of this in his *Moth Book* (1903) on plate XXVIII, f. 15. Undoubtedly a figure of the European *festucae* as Dyar had recognized although Holland persisted that it was a new species. Holland used the genus *Euchalcia*, Hb.

ab. *putnami*, Grote, *Bull. Buff. Soc.*, I, 193 (1873).

DESCRIP.—[Holland, *Moth Book*, 337 (1903), plt. XXVII, 15. “Dr Dyar treats this species as a form of the European *festucae*.”] The figure is that of a *festucae*.

ab. *coalescens*, Schultze, *Ent. Zt.*, XIX, 86 (1905).

ORIG. DESCRIP.—“Al. ant. maculis argenteis in area media confluentibus.” The author gave half a column to discuss the species.

ab. *miniana*, Schultze, *l.c.*

ORIG. DESCRIP.—“Forma dilutior (minor) al. ant. minianis maculis metallicis in media area perspicuis reliquis saepe restrictis.” A long discussion is added.

ab. *marisola*, Krulik, *Soc. Ent.*, XXIII, 11 (1908).

ORIG. DESCRIP.—“The two silvery spots are coalesced. Rare.”

ab. *festucella*, Hamp. (1913), Strand (1916), *Arch. Natg.*, 4, XXXII, A 2, 48 (1916).

ORIG. DESCRIP.—*Lep. Phalaena*, XIII, 507 (1913), “Forewing with the silvery spots below the cell confluent.”

ssp. *splendida*, Rang., *Ent. Rund.*, LIII, 22 (1935).

FIG.—*l.c.*, 8 (b. and w.).

ORIG. DESCRIP.—“Larger than specimens from Berlin (10 mm.). The colouring of the forewings brilliant, fringes and outermargin strongly golden tinted, the large central silver spots as well as the apical spot very softly lit up. Up to this the outer part moderately dark.”

Plusia iota, L.

Plusia, Treit. (1826) [*Phytometra*, Haw. (1803)] *iota*, L. (1758).

Esp., *Abbild. Noct.*, IV, 227, plt. CXIII, 5 (1789+?), noted that the figure came on the plate before that of the species. The ab. *inscripta*, f. 5.

Esp., *Abbild. Noct.*, IV, 227, plt. CXIII, 3-4 (1789+?), gave two figures of *iota*, Linn., more or less unrecognizable, both show a dark area below the stigmata area, but no metallic marking. Werneb. sponsors them in his *Beitr.*, II. Esp. cited Linn., Ed. XII, 844; P. L. S. Müller, *Uebers. Sys. Nat.*, I, 689 (1774); Fab.; de Vill.; Fuessli; Göze; Gesenius; *Catholicon* ?? Hft., 1, p. 224 (??).

Ernst & Engram., *Pap. d'Eur.*, VIII, f. 592 b, d, e, f (1793), gave illustrations of four different examples, all possessing the same main characters of the typical form but with a different setting.

The ground colour of the forewings of a delicate rose, covered in much of the area with brown shades; two waved gilded lines near the outer margin, and above all a V of gold and a little spot of gold by the side, and placed in the middle of these wings are the distinguishing characters.

In all these varieties the above characteristics are to be met with which distinguished the species.

Haw., *Lep. Brit.*, part 2, p. 256 (1809), gave a general description of what was then recognized as *iota* starting with the description by Linn.

Haw., *Lep. Brit.*, part 2, p. 256 (1809), when he came to study *iota* thoroughly all the specimens he had access to agreed with the description made by Linn, although there were two different types of marking and colour, one more common than the other, the more common form he took as typical *iota*, differentiating it thus: β . “*Alis bruneo-griseo ferrogineoque, variis gamma aurea, perfecta in medio.*”

DESCRIPTION—"Praecedente var. vix differt nisi in gamma aurea, perfecta medio, quae speciosior est et integra, nec interrupta. Cilia omnia rufa fusco maculata."

Hb., *Samml. Noct.*, IV, f. 282 (1800-03), gave an excellent figure of a typical form with the general slight ruddy suffusion or mottling over the whole ground, the central portion below the stigmata remnants being appreciably dark, with the metallic central dot tinted.

Treit., *Schmett. Noct.*, V (3), 151 (1826), cited Linn.; Hb.; Esp.; Bork.; Ernst & Engram.; de Vill.; Fuessli; View.; Cramer, etc.

Dup., *Hist. Nat.*, VII (2), 38, plt. 136, f. 2-3 (1829), gave two good figures as *iota*, the latter the paler form he called *percontationis*, Tr. This was a form lighter and slightly larger and with its character having only the V and no dot makes it a typical *iota*. It has the central area emphasized and rich in brownish shades. The other figure, 2, was dark with scarcely any differentiation of the central area and not variegated as in figure 3. That I take to be a *pulchrina*, Haw., which Dup. did not refer to although he discussed the two separate and disconnected appearance of imago and larva. The *interrigationis*, Bork., he treated as a Syn. and also the *protea*, Cram. (Stoll).

Frr., *Nou. Beitr.*, I, 80, plt. 47, f. 1 (1833), bred from two batches of larvae a number of the typical *iota*, Linn., and a number of a very light form to which he gave the name *ancora*. This form he described and figured on plate 47. The V was irregular and the dot separate, the dark area below was of a rich brown, and the ground was mottled with a golden-yellow; the whole much lighter than normal *iota* as figured by the author in the *Beitr.*, plt. 94.

Frr., *Beitr.*, II, 146, plt. 94 (1829), gave a very good figure of a dark form; nothing rufous about it.

H.-S., *Bearb. Sys.*, II, 395, figs. 265, 266 (1856?), gave two excellent figures, 265 *iota* with V and dot, 266 *id.* var. with dot enlarged to a blot and confluent with the V to a gamma mark. The red flush below the V and stigmata remnants was very distinct in 265. Of Hb. 282, H.-S. said that the two yellow spots were only slightly metallic stony, because the white was not so prominent.

Gn., *Hist. Nat.*, VI, 338 (1852), in dealing with *iota*, L., called attention to the fact that Doubleday and his friends had bred this species from quite distinct larvae at two different periods of the year. He pointed out that this showed that under the name *iota* were two separate species, and to the new form he tentatively gave the name var. *v-aureum*. The description follows this statement. (See *pulchrina*.)

Newman, *British Moths*, 453, (1869), gave an excellent b. and w. figure. [I took these parts in as published when I was a lad. Later editions are very poor as the wooden blocks got the worse for wear.] Specimens from lower Austria and the lower Alps and from various British collections all agree more or less well.

The essential difference between *iota* and *pulchrina* would appear to be, that in the former, there is a distinct rosy tinge, whilst the latter is distinctly rich purplish in colour; in *pulchrina* the stigmata are more distinct, and both these and the transverse lines are edged with metallic scales. The more rosy colour of *iota*, however, frequently finds a parallel variation in the brighter and more rosy tint in *pulchrina*, and *vice versa*, and the brighter outlines to the transverse lines and the

stigmata more generally characteristic of *pulchrina* are also occasionally reproduced as a parallel form of variation as, of course, in *iota*.

Stdgr., *Cat.*, Ed. III (1), 238 (1901), cited Splr., *Stett. e. Zt.* (1883), p. 154; the *ancora*, Frr., 47; ab. *percontationis*, Tr.; *bartholomaeii*, Mén. signo argenteo confluyente in litteram γ [certe sec. typ. Stdgr.]; ab. *inscripta*, Esp.; signo argenteo nullo vel subnullo; var. *baltica*, Splr., *Stett. e. Z.* (1875), p. 103 (obscurior); v. et ab. *amurica*, Stdgr., *Rom. Mem.* [*pulchrinae* var.] (multo obscurior; and a var. *baltica* separanda ?); var. *monogramma*, Alph., *Stett. e. Z.* (1887), 171 (al. ant. ut in ab. *a* sed obscuribus).

South, *M.B.I.*, II, 69, plt. 24, 7-8 (1908), gave two good figures. 8 is a typical form with a metallic V and a dot below somewhat outward of the tip. 7 has these spots united, ab. *percontationis*. He refers to specimens in which the V mark has almost disappeared and the dot quite so; and cites Esp.'s figure *inscripta* in which the whole central marking is absent.

Pierce, *Genit. Noct. B.I.*, 77, plt. 29 (1909), *P. iota*.

ORIG. DESCRIP.—“Harpe rounded at the anal angle, with marginal spines; clasper a slender arm; clavus a long slender club; uncus simple and curved, vesica with a strong cornutus.

Splr., *Schmett. Eur.*, I, 304, plt. 56, f. 5 (not 4) (1913), gave a good figure and noted ab. *percontationis*, Tr.; ab. *inscripta*, Esp.; ab. *baltica*, Stdgr.; and ab. *monogramma*, Alph.

Warr.-Stz., *Pal. Noct.*, III, 351, plt. 64 k, i, j (1913) gave five good figures and described what is now considered the typical form of this much confused species, *iota*, (*iota*, L), (*ancora*, Frr.), plt. 64 k. They included the following ab. *percontationis*, Tr. (= *bartholomaeii*, Mén.); ab. *inscripta*, Esp., plt. 64 i; r. *baltica*, Speyer (= *amurica*, Stdgr.), plt. 64 k; ssp. *monogramma*, Alph., plt. 64 j.

Of the Variation Barrett said:—

Very little variable except in the completeness or division of the central gold Y; but in the collection of Dr P. B. Mason is a specimen of a very beautiful pale grey tinged with purple, except the usual rhomboid chocolate dorsal blotch.

Tutt dealt with the (1) typical form as described by Linn. and as divided into two by Haworth, and the points of distinction, (2) ab. *percontationis*, the stigma confluent into a Y mark below the cell, (3) *ancora* paler with the description by Gn., Warr.-Stz., considers it to be a Syn. of *iota*, L. (Haw.), (4) ab. *inscripta*, Esp., with the stigma below the cell absent.

The Names and Forms to be discussed:—

iota, L. (1758), *Sys. Nat.*, Ed. X, 513.

ab. *inscripta*, Esp. (1787+?), *Abbild.*, IV, 229, plt. CXIII, 5.

ab. *percontationis*, Tr. (1826), *Schmett.*, V (3), 184.

ab. *ancora*, Frr. (1833), *Neu. Beitr.*, II, 89, plt. 47, 1. Syn. ?.

r. or ab. *bartholomaeii*, Mén. (1859), *Bull. Phys. Math.*, 135. Syn. ?.

ssp. or r. *baltica*, Speyer, (1875), *l.c.*, *Stett. Ent. Zt.*, 133.

ssp. or r. *monogramma*, Alph. (1887), *Stett. e. Zt.*, III, 549. Syn. ?.

ssp. *anatolica*, Schwng. (1938), *Ent. Rund.*, LV, 135.

From the time of Linn. there has been the utmost confusion in the assessment and opinions as to the forms of this species and of *pulchrina*.

Phytometra iota. Hampson's Note on the Form.

ab. *percontationis*—Forewing with the stigma below the cell forming a Y mark.

ab. *inscripta*—Forewing with the stigma below the cell absent or the V mark much reduced and the spot beyond it absent.

ab. *ancora*—Paler, ab. *baltica* darker, ab. *amurica* much darker. E. Siberia.

ab. *monogramma*—Similar to *percontationis* but darker. W. Turkestan. Hamp., *Cat. Lep. Ph.*, XIII, 536 (1913). "Much darker." E. Siberia.

The aberrations which are mainly based on the ground colour and suffusion by Warr.-Stz. and Hamps. in *Palearctic Noct.*, III, and *Lep. Phal.*, XIII, respectively are compared below.

Warr.-Stz. placed *ancora*, Frr., as a Syn. of *iota*. Hamps. treated this beautiful figure as an ab.

W.-S. placed ab. *bartholomaeii* as a Syn. of ab. *percontationis*; Hamps. cited it but did not place it.

W.-S. placed f. *amurica*, Stdgr., as a Syn. of *baltica*; Hamps. did the same. *baltica*, darker; *amurica*, much darker. E. Siberia.

W.-S. placed *monogramma* as a ssp.; Hamps. said *monogramma* was similar to *percontationis*, but darker. W. Turkestan.

W.-S. omitted *protea*, Stoll; Hamps. cited it.

Plusia pulchrina, Haw.

Plusia, Treit. (1826) [*Phytometra*, Haw. (1809)].

Tutt differentiated *pulchrina* thus, *Brit. Noct.*, IV, 29: Is only 38 mm. in expanse. The superior wings of a less intense rosy red, which approaches carnation colour more than does *iota* with the brown areas more numerous, thus making it appear more variegated. The elbowed line always strongly angulated, the subterminal more pronounced—more decidedly resembling an M in the middle. The reniform more visible greatly constricted in the middle enriched with golden colour at the bottom and with distinct black interior shading. The golden marks are thicker: the first resembling a U, rather than a Y, the second forming an oval point generally larger. Fringes always broken up with black. Inferior wings having the lines and border more distinct above. The female the same as the male although a trifle darker.

Haw., *Lep. Brit.*, 256 (1809).

"Alis brunneo griseo ferrugineoque rariis gamma aurea fracta-stigmatibus divaricatum remotis auro cinctis."

DESCRIPTION—Penultima var *simillima* at longe pulchrior. Dignoscitur primo intuitu; alis pallidioribus magis variegatis et potissimum stigmatibus ordinariis remotis divaricatis auro pulchre circumcinctis. Cilia omnia rufescentia fusco maculata.

Tutt, *Brit. Noct.*, l.c.

"The rich purplish tint which makes this species so beautiful is almost entirely wanting in *iota*, and the darker colour in this species shows up conspicuously the paler transverse lines making it look more variegated than *iota*. The ground colour in some specimens is redder (approaching *iota*) and in others the markings in the central area and following the submarginal are conspicuously darker, and inclining to black."

Gn., *Hist. Nat.*, VI, 338 (1852), described the new species taken out of *iota*, Linn., thus:—

"This species is extremely near to *iota*. It appears, however, to be distinct. Its larva resembles, I understand, that of *gamma*. It is of a pale green, without any longitudinal line. The head is green with a black line on each side. I have before me a very good drawing of it but I dare hardly say that it has not been taken ready to undergo pupation and it may have lost its markings as then happens to all Noctuae, especially the species in *Plusia*."

Pierce, *Genit. Noct. B.I.*, 77, plt. 29 (1909), *P. pulchrina (v-aureum)*.

ORIG. DESCRIP.—Harpe rounded at the anal angle; with marginal spines; clasper a slender arm; clavus a long slender club; uncus simple and curved; vesica with a strong cornutus.

Hamp., *Lep. Phal. Noct.*, VIII, 534 (1913), cited Hb. 292 (1802) "nec Linn." Haw. for *pulchrina*; Gn. for *v-aureum*; Speyer for *gammoides*; Auriv. for *percontatrix*; and Stdgr. for *buraetica*. He defined the following aberrations:

Ab. 1. *percontatrix*, Auriv. "Forewing with the stigma below the cell forming a Y mark."

Ab. 2. *gammoides*, "Speyer." "Forewing more brown and violaceous grey and with less rufous."

Ab. 3. *buraetica*, Stdgr. "Similar to ab. 2, but forewing with the stigma Y shaped."

Of the Variation Barrett said:—

Variation is usually very slight, and confined to the degree of completeness of the Y and the extent of chocolate shading. Some specimens, however, taken in Gloucestershire by the Rev. Alexander Nash, are pale pinkish-purple with violet reflections and a very pretty curved stripe of paler colour close to the base. In Sligo, Westmeath, and elsewhere in Ireland it is found in a rich, dark, strongly rippled form, and at Armagh with a large orange spot in the middle of the forewings. Very dark forms are found in the North of Scotland.

Warr.-Stz., *Pal. Noct.*, III, l.c. They described the type form: "Forewings pale dull rosy, with olive fuscous shading; a brown spot at middle of base; inner and outer lines nearly straight edged with brown, median area from inner margin to above middle ferruginous brown; a small V-shaped spot on vein 2 and a small round spot close beyond it pale golden; reniform stigma in part brownish edged; sub-terminal line and suffusedly margined with olive-brown, except above anal angle; hindwing fuscous brown; the terminal border darker."

Hamp., *Lep. Phal.*, XIII, 535 (1913), cited Dup., Schrank, Cram. (Stoll), Mén., Speyer, Alph., Stdgr., etc., and included the following aberrations:—

Ab. 1. *percontationis*, Tr. "Forewing with the stigma below the cell forming a Y mark."

Ab. 2. *inscripta*, Esp. "Forewing with the stigma the cell absent or the V mark much reduced and the spot beyond it absent."

Ab. 3. *ancora*, Frr. "Paler."

Ab. 4. *baltica*, Speyer. "Darker."

Ab. 5. *amurica*, Stdgr. "Much darker." Siberia.

Ab. 6. *monogramma*, Alph. "Similar to ab. 1, but darker." W. Turkestan.

Culot, *N. et G.*, I (2), 174, plt. 71, f. 14 (1916), gave a good figure but not so light generally as our British examples, i.e., it is the central European form. He remarks: "*iota* varies in a similar fashion to *pulchrina*, that is to say, one finds in the Baltic Provinces of Russia a darker form (*baltica*, Speyer), *percontationis*, Tr., corresponding with the ab. *percontatrix* of *pulchrina*."

In referring to the characters available for the distinguishing of *pulchrina* from *iota* we have said that in the last the silvery markings were generally smaller; here we ought to add that the decrease in these character markings leads naturally to the disappearance of the outer spot and sometimes even of both = ab. *inscripta*, Esp.

The Names and Forms to be considered:—

[*iota*, L. (1758), *Sys. Nat.*]

pulchrina, Haw. (1802), *Lep. Brit.*, 256.

ab. *v-aureum*, Gn. (1852), *Hist. Nat.*, VI, 339.

gammoides, Speyer (1875), *Stett. e. Zt.*, 103.

ab. *percontatrix*, Auriv. (1888), *Nord. Fjarl.*, 151.

ab. *juncta*, Tutt (1892), *Brit. Noct.*, IV, 29.

ab. *buraetica*, Stdgr. (1892), *Iris*, V, 370.

ab. *pallida*, Warr.-Stz. (1913), *Pal. Noct.*, III, 351.

ab. *incipiens*, Schwrd (1929), *Zt. Oestr.*, XIV, 107.

ssp. *urupina*, Bryk (1942), *Iris*, LVI, 57.

ab. *v-aureum*, Gn., *Hist. Nat.*, VI, 339 (1852).

ORIG. DESCRIP.—"The forewings are of a less pure rose, more flesh-tinted than in *iota*, with more numerous brown spots which renders them more marbled. The elbowed line strongly folded on the 4th lower nervure; subterminal more distinct and more clearly folded up shaped in the middle. The reniform stigma more visible, very confused in the centre, circled with gold below with some very distinct black dots inside. Thicker golden markings: first a U often a V, second forming an oval spot generally larger. Fringes always chequered with blackish. Hindwings with the lines and margins more distinct."

ab. *gammoides*, Stdgr., *Stett. e. Zeit.*, XXXVI, 103 (1875).

DESCRIP.—"Violet-grey, like many *gamma*, not red as in the typical form. Distinctly smaller than *iota*."

ab. *gammoides*, Speyer, *Schmett. Eur.*, I, 30 3(1907).

ORIG. DESCRIP.—“Darker (than *gamma*), with stronger purple-grey tinge on the forewing; in the Ostsee provinces, as an aberration also in N. and Mid-Germany.”

ab. *percontatrix*, Auriv., *Nord. Fjar.*, 151 (1888) [*W.-S., Pal. Noct.*, III, 354, plt. 64 i (1913)].

DESCRIP.—“The two golden spots are confluent.”

ab. *pallida*, Warr.-Stz., *Pal. Noct.*, III, 351 (1913).

ORIG. DESCRIP.—“The ground colour is whitish.” Engadine.

ab. *buraetica*, Stdgr., *Iris*, V, 370 (1892 [*Pal. Noct.*, III, 351, plt. 64 k (1913)]).

DESCRIP.—“Is a darker brownish-grey form with stronger golden tinge and occasional spots, from the Keuter Hill,” and E. Siberia.

ab. *incipiens*, Schwrd., *Zt. Oestr. Ent. Ver.*, XIV, 107 (1929).

ORIG. DESCRIP.—“Has the two golden markings of the forewings absent. The distal markings are wholly wanting.” (The hook-shaped mark is represented only by a small trace (1 mm.) attached to the vein lying on the golden triangle (apex of the hind and outer margins). This aberrant character also occurs in *P. iota*, but in *pulchrina* it is wholly unknown).

ssp. *urupina*, Bryk, *Iris*, LVI, 57 (1943).

ORIG. DESCRIP.—“Is in the ♂ most related to ssp. *buraetica*. The ♀ is, however, not so reddish-brown, the hindwings not so suffused, passing from outer margin to base, but the contrast between the large dark brown marginal band and the pale yellowish proximal part which is also in the ♂ sex purer, is very striking. The golden discal spot, as a rule, in the upper loop and the well-separated, enlarged, lengthened spot.” Length of forewing: ♂ 19.4 to 19.8 mm., ♀ 18.9 to 21.8 mm. Kuriles.

Plusia (Phytometra) gamma, L.

Plusia, Ochs., l.c. [*Phytometra*, Haw., l.c.]. Most authors.

Frisch, *Beschreib. Insect. Deutsh.*, V, 37, plt. xv, 1-4 (1716), gave a rough woodcut recognisable by description; teste Wernb., I, 99.

Rösel., *Belust. I*, Class III, plt. v (1746-61)? gave 2 excellent figures. The Y was very perfect and silvery and the reddy area below was evident. The hindwing had no median narrow band. There was a white blotch towards the base of the forewing. [This reference is often given as Class II in error.]

Reaum., *Mems. Hist. Ins.*, V-VI, in his mass of classified detail incidentally figures Lep. species not as species but as illustrating the character he may be discussing, especially in vols. I, II (1734-1736). The figures are rough in b. and w.

Sepp., *Beschou. Wond. Gods.*, I (5), plt. I, 1-6 (1762), gave 2 excellent typical figures.

Schaeffer, *Icones Ins. Ratisbon.*, I, 84, f. V (1766), gave 2 figures, spread, folded. The gamma mark was difficult to trace out and rather golden or silvery; and some lighter markings seem to confuse it. The ferruginous area could be traced. Hindwing: hind margin very distinct band, ground colour unusually light and clear, crossed by a distinct narrow dark median band.

Schiff., *Verz.*, 93, Z. 5 (1775).

Illig., *Rev. Verz.*, I, 350, Z. 5 (1801), cited Fab., Bork., Brahm and Esper. He quoted a description of the larva from the last. He also cited *lamba*, Geoffroy, II, 156.

Bork., *Schmett. Noct.*, IV, 782 (1792), described in some detail the imago, larva and life-history. He cited among others, de Vill., Fab., Müller, Ray, Frisch., Schiff., Berl. Mag., Naturfor., Göze, Lang, etc.

Ernst & Engram., *Pap. d'Europe*, VIII, 134, fig. 594, *c, d, e, f, g*. *d* and *g* are undersides. In fig. *c*, the characteristic mark is isolated. it is of a golden colour and there are some golden rays and spots spread on the wings of which the ground is grey elsewhere almost wholly covered with blackened spots and lines of varied shapes. This is one of the more brown males; females are often very similar, fig. *f*. The figures in my copy have probably deteriorated.

Esper, *Abbild. Noct.*, IV, 204, plt. cxi, f. 1-2 (1789+?), gave the Linn. description from the *Syst. Nat.*, XIIed. (Tutt went back to Xth Edn.). Esper also quoted descriptions from Müller, *Ueberf.*, Fab., Schiff., Ray, Frisch., Reaum., Geoffroy, Scopoli, and gave references to most works previously published. His own description covered some four quarto pages with the life history.

Hb., *Samml. Noct.*, 283 (1800-1803), gave a good figure, except that the line was much too clear and prominent.

H.-S., *Sys. Bearb.*, II, 394 (1850), remarked on the fig. of Hb., "zu wenig glänzend."

Haw., *Lep. Brit.*, 256-7 (1809), described it in two forms: (a) *Alis subargenteo griseo fusco-que variis, gamma graecorum argentea*. (b) *Alis saturationibus, minus argenteis, rubedine magis mixtis, gamma graecorum absolute aurea nec argentea*. *Stigmatibus ordinariis exacte ut in iota γ atque similiter tenuissime auro circumcinctis*.

Treit., *Schmett.*, V (3), 185 (1826), cited these figures: Hb. 283; Esp., IV, plt. cxi; Ernst & Eng., fig. 594; Rösch., I, V, 1-4; Frisch., XV, 1-4; Reaum., II, 26, 27, 4-5; Sepp., I, 1-4; Wilkes, II, A. 1.

Dup., *Hist. Nat.*, VII (2), 41, plt. 136, 4 (1829), gave a good figure in which the upper arm of the gamma mark facing the base of the wing was produced by a white double curve to reach the inner angle.

Stephens, *Illus.*, III, 103 (1830), remarked on the abundance of this species in gardens in the autumn, especially along the Thames Valley around London. He described a var. β in which "Anterior wings darker, less silvery, and deeply tinged with rosy, with the central character of a golden hue."

Frr., *Beitr.*, III, p. 37, plt. 106 (1830), gave a good figure of a dark black-grey form. The central area of the forewing is without any trace of the silver Y. There are two fasciae from the costa about the position of the reniform stigma: the outer one the larger dull golden in colour, the inner one dull silver and shorter. They do not reach the middle of the wing. The markings are not strong. There are other

dull silvery markings along the costa. The blackish predominates. This may be called *ab. nigra*.

Frr., *Neu. Beitr.*, VI, plt. 544, 1 (1847), gave a good figure, rather more black than grey, marking not too emphasized. He named this dark form *ab. nigricans*.

Gn., *Hist. Nat.*, VI, 348 (1852), after describing it and giving its life-history with the description of Esper, he cited: Albin, Reaum, Roesel, Scop., Schaeff., Sepp., Walk., Schiff., Fab., Esp., Rossi, Brehm, Bork., Don., Haw., Hb., Tr., Dup., Steph., Bdv., Geoff., Ernst & Engram.

Stdgr., *Cat.*, IIIed., 238 (1901), gave the *ab. nigricans*, Frr., and described *ab. gammina*, "duplo minor, al. ant. magis signatis."

Splr., *Schmett. Eur.*, I, 304, plt. L, 7, gave a good figure, but too brown and dark, as he said. He gave a good summary of the variation; reported the *pallida* and *rufescens* of Tutt, and the violet-black-brown form as *nigricans*, and also *gammina*, Stdgr., a small Syrian form.

Hamp., *Cat. Lep. Phal.*, XIII, 538, fig. 126, b. and w. (1913), cited *gammina*, Stdgr., and *alepica*, Nitsche, both of which he treated as abs. and gave short diagnoses.

Warr.-Stz., *Pal. Noct.*, III, 351, plt. 65 a (1913), gave five figures, and treated of the typical form as purplish-grey with darker suffusion in places; they accept the two forms described by Tutt in *B.N.*, viz., *pallida* and *rufescens*; include *nigricans*, Splr., and *gammina*, Stdgr., and add a new form *purpurissa*. The Syrian form *gammina*, Stdgr., was also included.

Of the Variation Barrett said:

Variable in size, specimens sometimes occurring of less than one half the ordinary span of wings, with all intermediate sizes. Mr Porritt has recorded the rearing from larvae found in Kent, of the smallest form, in some numbers. Variable also in the ground colour and general tone of colour of the forewings, from silvery-whitish-grey to deep slate-grey, brown-grey, and purple-grey. A specimen taken on Dartmoor by Major Still in September 1894, and now in Mr Hanbury's collection, is of a very rich velvety black, with the Y mark conspicuously silvery-white—a most remarkable example. Another almost as unusual, in the collection of Mr Sydney Webb, has a silver Y reduced to a V.

Tutt dealt with (1) the typical form and its chief characters for variation, (2) named a pale form *pallida*, and (3) a form in which the ferruginous tint was much more spread, *rufescens*. He quoted the description of Linn. (*Sys. Nat.*, p. 513).

The Names and Forms to be considered:

lambda, Geof., *Hist. Ins.* (1764), II, 156. Syn. [*gamma*= γ ; *lambda*= λ].
gamma, L. (1758), *Sys. Nat.*, 513.

ab. pallida, Tutt (1892), *Brit. Noct.*, IV, 31.

ab. rufescens, Tutt, *l.c.*

ab. gammina, Stdgr. (1901), *Cat.*, 3rd ed., 238.

ab. rufa, Verity (1904), *Bull. Ent. Soc. It.*, XXXVI, 77.

ab. nigricans, Splr. (1907), *Schmett. Eur.*, I, 304.

ab. brunnescens, Gelin (1912), *Cat. Lep. Oust. Fr.*, 143.

ab. purpurissa, Warr.-Stz. (1913), *Pal. Noct.*, III, 351.

ssp. *bipartita*, Orstad, *Ent. Tidskr.*, L, 251.

ab. *comma*, Ostrig. (1929), *Trav. Soc. Sci.*, I (1).

ab. *gartneri*, Skala (1929), *Ent. Zet.*, XIII, 317.

ab. *alepica*, Nitsche (1911), *Verh. Z. b. Gess. Wien*, LXI, 50.

ab. *gammina*, Stdgr., *Cat.*, IIied., 238 (1901).

ORIG. DESCRIP.—“*Duplo minor*, al. ant. magis signatis.”

ab. *rufa*, Verity, *Bull. Soc. Ent. It.*, XXXVI, 77 (1904).

DESCRIP.—“The black dusting is replaced by a nice red, the more or less golden gamma is silvery.”

ab. *alepica*, Nitsche, *Verh. z. b. Gess. Wien*, LXI, 50 (1911).

DESCRIP.—“Forewings paler. Hindwings completely hyaline except for the wide blackish margin.” Rohrwalde. *Drdt.-Stz.*, III (2), 21 (1936).

ab. *nigricans*, Splr., *Schm. Eur.*, I, 304 (1913), gave a good typical figure but somewhat too dark and not grey enough for our British form.

ORIG. DESCRIP.—“On the forewings, quite up to the narrow pale border, wholly violet-black-brown tinted.”

Hamp., *Cat. Lep. Ph.*, XIII, 539 (1913). Much smaller; forewing with the stigma larger. Syria, Asia Minor.

ab. *brunnescens*, Gelin & Lucas, *Cat. Lepid. Ouest. France*, 143 (1912).

ORIG. DESCRIP.—“A very fine melanic specimen, caught at Royan, l.viii.1905, has the lines of the forewings marked out in brown, the outer angle of these same wings and the anal angle of the hindwings marked with a broad brown patch. It may be named ab. *brunnescens* (Gelin).”

ab. *purpurissa*, Warr.-Stz., *Pal. Noct.*, III, 351 (1913).

FIG.—*l.c.*, 65 a.

ORIG. DESCRIP.—“The ground colour is deep olive-brown; the inner and outer lines violet; the latter double; submarginal line lustrous violet irregularly waved and below the middle forming a strong W shaped mark; the gamma mark is pale golden, and the edges of the dark stigmata are like the inner line finely lustrous; a pale violet terminal stripe before the termen; hindwing, bronzy-brownish with broad dark terminal border.” Sussex.

ab. *bipartita*, Orstad, *Ent. Tidskr.*, L, 256 (1929).

FIG.—*l.c.*, LI, 256, fig. (1930).

DESCRIPTION given in *Drdt.-Stz.* “has the silvery mark split into two,” Sweden (III, 221 (1936)).

ab. *comma*, Ostretk., *Trav. Soc. Sci. Utrs. (Moth-Not.)*, I (1), P. 1 (1929).

DESCRIPTION—“The gamma mark is reduced to a simple fairly thick bar, that is excurved in centre towards the outer margin.” From around Vilna.

[ab. *comma*, Skala, *Ent. Zt.* (1929).

“Farbung fahl Gamma zeichen gross und zerflossen, sieht ganz fremdartig aus. Von Urban bei Grätz gefangen. Nach dem langst † mährischen. (Moravian).]

Drdt.-Stz., *Pal. Noct. Supp.*, III, 221 (1936), reported the following additions to Warr.-Stz. *P. gamma*.

1. ab. *gartneri*, Skala, *Ent. Zeit.*, 317 (1929).

DESCRIP.—“Is clearly an aberrative specimen of strange appearance. Ground colour pale with ‘dissolved’ gamma mark. According to a specimen from Gratz in Moravia.”

ab. *bipartita*, Orstadius, *Ent. Tidskrt.*, L, 251 (1829).

DESCRIP.—“Has the silver mark split into two.” Sweden.

ab. *gartneri*, Skala, *Ent. Zeit.*, XLII, 317 (1929).

ORIG. DESCRIP.—“Fawn coloured suffusion, with large gamma marks, and making it like a foreign species. Found in urban districts of the country. As abundant as the Moravian †.

There are many new forms recorded during the early part of the period after 1939 onward, contained in the issues of numerous Continental magazines which have not yet been circulated. With the kind help of Mr Lempke I have obtained a few descriptions, and know of others.

My best thanks are due to Mr H. Stringer, late of the Brit. Museum, who for many years has obtained descriptions for me otherwise not accessible.

HY. J. TURNER.

APPENDIX (3) TO VOL. (III).

To *O. vaccinii*, p. (4) add:

ab. *auronigra*, Heylaerts, *Tidschr. voor Ent.*, **33**, XXXVIII (1889).

ORIG. DESCRIP.—“ A specimen was found by me which had the forewings dark black, a basal point, the reniform and orbicular, the subterminal line and the fringes brilliantly golden yellow.”

Described as a form of *ligula*. I could examine the type. The colour description is altogether wrong. It is a true *vaccinii*, ground colour dark red-brown. Subterminal band and circumscription of the two stigmata reddish-yellow, ground colour of the stigmata moreover paler, in the basal area a small reddish-yellow point. The two transverse lines and the nervures in the central area are bluish-grey, central area a little powdered with bluish-grey. The specimen is a true *glabroides*, Fuchs. This name must fall as a synonym.—B. J. Lempke.

Add to *O. vaccinii*, l.c.:

ab. *fusca*, Schulze, *Int. Ent. Zts.*, **6**, 305 (1913).

ORIG. DESCRIP.—“ Distinguished by the black-brown ground colour, resembles in the markings the typical form, with the exception of the dark ground colour.”

Add to *O. vaccinii*, l.c.:

ab. *sepieae*, Meves, *Ent. Tidskr.*, **35**, 35 (1914).

ORIG. DESCRIP.—“ Has the whole forewing up to the outer border of a sepia colour, with transverse lines and central shade a little darker, and nervures a little paler.” Sweden.

(*sepieae* and *fusca*, Lenz in Osthelder, are synonyms of *fusca*, Schulze.)

To l.c., add:

ab. *cuneata*, Lempke, *T. v. Ent.*, 328 (1941).

ORIG. DESCRIP.—“ Orbicular and reniform stigmata are placed in a dark, cuneate spot.”

To l.c., add:

ab. *semiconfluens*, Lempke.

ab. *confluens*, Lempke, l.c.

To l.c., add:

ab. *conspicua*, Lempke, *Tijd. v. Ent.*, 326 (1941).

ORIG. DESCRIP.—“ Ground colour of the forewings unicolorous pale yellowish, transverse lines distinct, orbicular and reniform stigmata for the greater part outlined in black and in the lower half filled with black, before the outer margin a row of sharply contrasting rather large black dots.”

To l.c., add:

ab. *bicolor*, Lempke, *Tijd. v. Ent.*, 327 (1941).

ORIG. DESCRIP.—“ Basal and marginal areas dark red-brown, central area reddish-yellow, sharply contrasting. The marginal area divided by a pale yellowish submarginal line.”

To *l.c.*, add:

ab. *auronigra*, Heylaerts, *T. v. E.* (1898), p. 38, replace ab. *glabroides*, Fuchs, (1901).

race *vacc.*, f. *rufo-caerulescens*, Lempke, *Lambill.*, 46 (1946).

ORIG. DESCRIP.—“Ground colour ashy-blue, the markings in the basal area, the transverse lines, the circumscription of the stigmata, the lower half of the reniform, the costa and a narrow submarginal band clear red.”

[Mentioned, but not named, by Wightman, *Ent. Rec.*, 41, 109 (1929).]

To *l.c.*, add:

ab. *brunnescens*, Lempke, *T. v. E.*, 327 (1941).

ORIG. DESCRIP.—“Forewings unicolorously brownish, markings obsolete.”

To *l.c.*, add:

ab. *mixta-fusca*, Lempke, *T. v. E.*, 328 (1941).

ORIG. DESCRIP.—“Ground colour of the forewings dark brown to blackish-brown; nervures, circumscription of the stigmata and submarginal band yellowish.”

To *l.c.*, add:

ab. *bipunctata*, Lempke, *T. v. Ent.*, 328 (1941).

ORIG. DESCRIP.—“Not only the reniform stigma, but also the orbicular stigma with dark lower half: marking for the rest normal.”

To *O. ligula*, p. (10), add:

ab. *auronigra*, Hylrts., *Tijd. v. Ent.*, XXXIII, p. 38 (1895).

ORIG. DESCRIP.—“Un spécimen fut trouvé par moi—ayant les ailes antérieures d'un noir foncé, un point basal, les taches réniforme et rondes, la subterminale et la frange d'un jaune d'or brillant. Je nemmarai cette superbe aberration *auronigra*.”

To *O. ligula*, p. (10), add:

ab. *obscura*, Lempke, *T. v. Ent.*, 331-2 (1941).

ORIG. DESCRIP.—“Forewings brown-black to grey-black, markings distinct, transverse lines and as a rule also the submarginal band paler greyish. Extreme examples have also the submarginal band whitish.”
cf. *polita* of *vaccinii*. See Culot, *N. et G.*, II, 12-13.

To *l.c.*, add:

ab. *bipunctata*, Lempke, *T. v. Ent.*, 332 (1941).

ORIG. DESCRIP.—“The lower half of the orbicular is also filled with blackish.”

To *l.c.*, add:

ab. *rufescens*, Lempke, *T. v. Ent.*, 336 (1941).

ORIG. DESCRIP.—“Forewings pale (clear) red-brown with distinct markings but without yellow nervures or circumscription of the stigmata.”

To *l.c.*, add:

ab. *pseudo-mixta*, Lempke, *T. v. Ent.*, 330 (1941).

ORIG. DESCRIP.—“ Ground colour of the forewings red-brown, circumscription of the stigmata, nervures and submarginal band, yellow.”

To *l.c.*, add:

ab. *albofasciata*, Lempke, *T. v. Ent.*, 331 (1941).

ORIG. DESCRIP.—“ Forewings dark red-brown to blackish-red, before the outer margin a white band, but no pale nervures or circumscription of the stigmata.”

To *l.c.*, add:

ab. *rufofasciata*, Lempke, *T. v. Ent.*, 331 (1941).

ORIG. DESCRIP.—“ Forewings dark red-brown, with light red to light red-brown submarginal band.”

To *l.c.*, add:

ab. *nigrescens*, Lempke, *T. v. Ent.*, 331 (1941).

ORIG. DESCRIP.—“ Forewings unicolorously brown-black to grey-black, without markings.”

To *l.c.*, add:

ab. *pallida*, Lempke, *Lamb.*, 75 (1946).

ORIG. DESCRIP.—“ Greyish-white sprinkled with reddish atoms; markings in pale red-brown, pale grey band in outer area, nervures whitish-grey.”

Described, but not named, by Wightman, *Ent. Rec.*, 41, 110 (1929).

The inner line is large and occupies almost the whole basal area. The outer line is narrower and only at the costa on both sides enlarged; from it 4-5 whitish spots shine up [hervorleuchten] at the costa. Sometimes the lower part of the reniform stigma forms a round black central spot.”

Warren gives this form as an ab. of *vacc.*, altogether wrongly, as follows already from Fuchs's text.

To *O. ligula*, p. (10), add:

ab. *pulverulenta*. “ The author is *not* De Graslin, but Oberthür. De Gr. did not give a name. Correct reference: Oberthr. in Culot, *Noct. et Geom.*, II, 14, pl. 40, fig. 12.

To *S. (M.) satellitia*, p. (20), add:

ab. *brunneor-flavomaculata*, Lempke, *T. v. Ent.*, 359 (1941).

ORIG. DESCRIP.—“ Ground colour of the forewings brown, without red or grey, reniform stigma yellow.”

To *l.c.*, add:

ab. *brunneor-rufomaculata*, Lempke, *T. v. Ent.*, 359 (1941).

ORIG. DESCRIP.—“ As above, but reniform stigma reddish.”

Lempke classifies the forms of *transversa* (*satellitica*) as follows:

- A. General colour red-brown.
 - 1. Reniform white = *albo-rufescens*, Tutt.
 - 2. Reniform yellow = *transversa*, Hufn.
 - 3. Reniform reddish = *brunnea*, Lampa.
- B. Ground colour brown.
 - 1. ab. *brunneor*, Strand.
 - 2. ab. *brunneor-flavomaculata*, Lempke.
 - 3. ab. *rufomaculata*, Lempke.
- C. Ground colour brown-grey.

Lempke's Notes on

- 1. ab. *trabanta*, Huene., is a syn. of *alborufescens*, Tutt.
cf. Esp. Abbild. Noct., plt. 169, 7.
- 2. ab. *transversa*, Hufn.
 ORIG. DESCRIP.—“ Has red-brown forewings with yellow reniform.”
- 3. ab. *brunnea*, Lampa, is not “ a dark red-brown.” The supposed type form is in Lampa's collection, and has red-brown forewings with reddish reniform as in South's figure.
- 4. ab. *brunneor*, Strand. (Hom. “ *brunnear* ”) has a milk-white reniform.
- 5. ab. *albipuncta*, Strand. “ The brown-grey form with white reniform.”

To *A. croceago*, p. (23), add:

ab. *brunneago*, Lempke, *T. v. Ent.*, 356 (1941).

ORIG. DESCRIP.—“ Forewings unicolorously brown-red; markings, with the exception of the white spots on the costa, obsolete.”

To *X. lutea* (*flavago*), p. (32), add:

ssp. *post-lutea*, Bryk., *Iris*, LVI, 42 (1942).

ORIG. DESCRIP.—“ Compared with the specimens from Kamtschatka the dull rusty violet transverse band is more interrupted by the yellow ground colour. But the distinguishing feature from the type form is the hindwings. They are always ornamented with an outer line which is much stronger marked than is met with in aberrative examples of *lutea*. The ♀ shows this subspecific character in still stronger degree. This central band of the hindwings extends in its lower part along the outer border up to the base. Underside not clearly different. Smaller than the typical form. Length of the forewings: ♂ 15.9 to 16.8 mm., ♀ 16 to 16.8 mm. “ Kuriles.”

To *M. circellaris*, p. (40), add:

ab. *rubrior*, Nordström., *Svens. Fjarilr.*, 189 (1939).

ORIG. DESCRIP.—“ The darkest form has red-brown forewings with the transverse lines, body and spots on the margin ochre-yellow, with the fringes of the hindwings lighter than the general wing area ” Sweden.

To *l.c.*, add:

ab. *suffusa*, Lempke, *T. v. Ent.*, 347 (1941).

ORIG. DESCRIP.—“ Ground colour of the forewings strongly dusted with dark, especially in the submarginal area.”

To *l.c.*, add:

ab. *grisescens*, Lempke, *Tijd. v. Ent.*, 347 (1941).

ORIG. DESCRIP.—“Ground colour of the forewings pale brownish grey.”

To *l.c.*, add:

ab. *obsolescens*, Lempke, *T. v. Ent.*, 347 (1941).

ORIG. DESCRIP.—“Markings of the forewings (transverse lines and stigmata) very faint.”

To *l.c.*, add:

ab. *obsoleta*, Lempke, *T. v. Ent.*, 348 (1941).

ORIG. DESCRIP.—“The dark spot in the lower half of the reniform fails.”

To *l.c.*, add:

ab. *maculata*, Lempke, *T. v. Ent.*, 348 (1941).

ORIG. DESCRIP.—“The reniform wholly filled with black.”

To *C. xerampelina*, p. (52), add:

ab. *nigrescens*, Lempke, *Tijd. v. Ent.*, 363 (1941).

ORIG. DESCRIP.—“Like *centrago*, but central band and hind margin blackish.”

To *l.c.*, add:

ab. *juncta*, Lempke, *l.c.*, ab. *semiconfluens*, Lempke, p. 366.

To *D. oo*, p. (56), add:

ab. *juncta*, Lempke, *Tij. v. Ent.*, 408 (1942).

To *P. retusa*, p. (62), add:

ab. *grisea*, Lempke, *Tij. v. Ent.*, 414 (1942).

ORIG. DESCRIP.—“Ground colour of the forewings dark grey.”

To *l.c.*, add:

ab. *nictitans*, Lempke, *l.c.*

ORIG. DESCRIP.—“Circumscription of the stigmata and of the transverse lines strikingly pale, sharply contrasting.”

To *R. subtusa* add:

ab. *rufescens*, Lempke, *Tij. v. Ent.*, 413 (1942).

ORIG. DESCRIP.—“Ground colour of the forewings reddish.”

To *l.c.*, add:

ab. *grisea*, Lempke, *l.c.*, 414 (1942).

ORIG. DESCRIP.—“Ground colour of the forewings pure dark grey.”

To *l.c.*, add:

ab. *rufolineata*, Lempke, *l.c.*

ORIG. DESCRIP.—“Transverse lines and circumscription of the stigmata reddish yellow.”

To *l.c.*, add:

ab. *obsoleta*, Lempke, *l.c.*

ORIG. DESCRIP.—“The circumscription of the stigmata is obsolete.”

To *l.c.*, add:

ab. *semiconflua*, Lempke, *l.c.*

To *C. affinis*, p. (65), add:

ab. *obsoleta*, Lempke, *Tij. v. Ent.*, 413 (1942).

ORIG. DESCRIP.—“Ground colour of the forewings reddish, white costal marks obsolete.”

To *C. trapezina*, p. (68), add:

ab. *fasciata*, Erschoff., *Trudy. Ent. Ross.*, XII, 207 (1882). cf. *badio-fasciata*, Teich., *Stett. e. Ztg.*, XLIV, 173 (1883), and Seitz, III, plt. 47g.

ORIG. DESCRIP.—(Not obtained.)

Some of the dark males approach the ab. *badio-fasciata*, Teich. (= *obscura*, Auriv.) in which, however, the median is dark fuscous, while the basal and terminal areas are pale ochreous.

ab. *badio-fasciata*, Teich., *Stett. e. Ztg.*

ORIG. DESCRIP.—“These specimens have the ground colour like normal *trapezina*, only the male is paler and the ♀ more reddish-yellow. The marking on the upperside is typical, but the discal area is dark chestnut brown, and it follows that the black point is not shown, but the waved line is on the outer side moderately emphasized dark. Below, the forewings are darker than in the normal form. The hindwings have instead of a curved row of spots a wide black-grey band, and between the base and the discal point is found the beginning of a similar band on the costal margin.” Riga.

To *l.c.*, add:

ab. *obscura*, Tutt, Warr.-Stz., *Pal. Noct.*, III, 330 (1910), cf. Lempke, *Tij. v. Ent.*, 410 (1942).

To *l.c.*, add:

ab. *ochrea-conspersa*, Lempke, *Tij. v. Ent.*, 409 (1942).

ORIG. DESCRIP.—“Forewings yellowish strongly powdered with black scales.” “By this name I restrict *conspersa*, Warr.-Stz., to the form in which the forewings are reddish with strong black dusting and which makes quite a different impression.”—Lempke.

To *l.c.*, add:

ab. *aurantia*, Lempke, *Tij. v. Ent.*, 409 (1942).

ORIG. DESCRIP.—“Ground colour of the forewings orange, markings distinct.”

To *E. ochroleuca*, p. (74), add:

ab. *obscura*, Lempke, *Tij. v. Ent.*, 85, (449), (1943).

ORIG. DESCRIP.—“Ground-colour of the forewings dark brown, markings normal still darker.”

To *D. bicruris* (*capsincola*), p. (87), add:

ab. *juncta*, Lempke, *l.c.*

To *D. carpophaga* (*conspersa*, *nana*), p. (95), add:

ab. *juncta*, Lempke, *l.c.*

To *D. cucubali* (*rivularis*), p. (80), add:

ab. *disjuncta*, Lempke, *Tijd. v. Ent.*, (306), (1940).

ORIG. DESCRIP.—“Orbicular and reniform stigmata do not touch each other.”

To *D. albimacula*, p. (92), add:

ab. *fasciata*, Lempke, *Tijd. v. Ent.* 310 (1940).

ab. *semiconfluens*, Lempke, *l.c.*

ORIG. DESCRIP.—“Forewings with dark central shade.”

To *H. dysodea* (*chrysozona*), p. (102), add:

ab. *nigrofasciata*, Lempke, *Tijd. v. Ent.*, 312 (1940).

ORIG. DESCRIP.—“Central band blackish, sharply contrasting, the rest normal.”

To *H. serena*, p. (104), add:

ab. *leuconota*, Eversmann, *Fn. Volg.*, p. 235 (1844).

ORIG. DESCRIP.—“Corpus album; alae anticae cretaceae spatio medio nigro, ut in specie genuina-posticae albae, externe nigricantes, maculis albidis anguli analis.”—Volga area, Sarepta.

To *D. templi*, p. (118), add:

ab. *brunnescens*, Hdm.?

To *l.c.*, add:

ab. *fasciata*, Lempke, *Tijd. v. Ent.*, 312 (1940).

ORIG. DESCRIP.—“Forewings with dark central shade.”

To *l.c.*, add:

ab. *confluens*, Lempke.

To *l.c.*, add:

ab. *villarubia*, Ajen., *Eos.*, XXI, 177 (1945).

FIG.—*l.c.*, plt. v, figs. 8, 9.

ORIG. DESCRIP.—“Wingspan 49 mm. Hairs of thorax much darker than in *quinta*, some yellowish tufts contrasting well. Upper surface of f.w. more variegated than in the aforementioned form, with the scales greenish-bluish, offering a greater contrast with the yellow ones. Upper surface of h.w. more yellowish especially in the fringes. Underside of all wings with the ground colour distinctly yellowish and with the patterns much more clearly marked.” Burgos, at light.

To *l.c.*, add:

ab. *quinta*, Ajen., *Eos.*, XXI, 177 (1945).

FIG.—*l.c.*, plt. v, figs. 5, 6.

ORIG. DESCRIP.—“Wingspread from 38 to 44 mm. Hairs of thorax and upper surface of f.w. greyish, rather greenish, which colour covers nearly all the surface of the f.w. except for the inner curve of the extra-basal line, the outer curve of the elbowed line, the subterminal, and a streak situated below the cubital, which extends from the base of the wing as far as the last mentioned line. Orbicular and reniform less yellowish than in English examples and contrasting more with the ground because of the dusting which is present on the wing surface.

Fringes as in the typonominal form. Upper surface of h.w. more grey and less yellowish than in specimens from England, and with the subterminal lines rather more marked and the fringes as in the former. Under-side of f.w. and h.w. more grey." Burgos, at light.

To *M. oxyacanthae*, p. (138), add:

ab. *juncta*, Lempke, and ab. *confluens*, Lempke, *Tijd. v. Ent.*, 369 (1941).

To *l.c.*, add:

ab. *obsoleta*, Lempke, *Tijd. v. Ent.*, 369 (1941).

ORIG. DESCRIP.—"The dark circumscription of the orbicular and reniform fails completely so that the two stigmata hardly contrast."

To *l.c.*, add:

ab. *dentatelineata*, Lempke, *Tijd. v. Ent.*, 369 (1941).

ORIG. DESCRIP.—"The outer line black and sharply dentated. Moreover the example in question lacks the white spot on the inner margin."

To *B. meticulosa*, p. (143). add:

ab. *albilinea*, Lempke, *Tijd. v. Ent.*, 318 (1940).

ORIG. DESCRIP.—"Forewings unicolorously dark grey with clear markings and sharply contrasting white inner and outer line."

To *l.c.*, add:

ab. *viridescens*, Lempke, *Tijd. v. Ent.*, 85 (450) (1943).

ORIG. DESCRIP.—"Forewings without any red or rosy tint, markings of a beautiful dark green."

To *l.c.*, add:

ab. *effusa*, Lempke, *l.c.*

ORIG. DESCRIP.—"The markings of the forewings washed out."

To *l.c.*, add:

ab. *reducta*, Lempke, *l.c.*

ORIG. DESCRIP.—"The dark central band does not reach the inner margin."

To *l.c.*, add:

ab. *trapezina*, Lempke, *Tij. v. Ent.*, 85 (451) (1942).

ORIG. DESCRIP.—"The central band strongly enlarged at the inner margin."

To *B. lucipara*, p. (146), add:

ab. *flavescens*, Lempke, *Tijd. v. Ent.*, 85 (454) (1942).

ORIG. DESCRIP.—"Submarginal band pale yellowish; about of the same colour as the reniform stigma. The hindwings are as a rule also a little paler." Deventer(bold), Holland.

To *l.c.*, add:

ab. *clausa*, Lempke, *l.c.*

ab. *semiconfluens*, Lempke, *l.c.*

To *l.c.*, add:

ab. *obsoleta*, Nierleck., *Tij. v. Ent.*, **85** (454) (1942).

ORIG. DESCRIP.—“Reniform stigma wholly filled with dark and hardly contrasting.”

To *l.c.*, add:

ab. *pallida*, Lempke, *l.c.*

ORIG. DESCRIP.—“The whole insect paler; head, thorax and central area with feeble lilac tint; hindwing very pale grey.”

INDEX.

	PAGE		PAGE
adusta	169	dysodea (chrysozona)	101, 292
advena	165	elymi	268
affinis	64, 291	erythrocephala	11
albimacula	91, 292	exsoleta	229
albovenosa	267	extrema (concolor)	268
algae	269	fasciuncula	271
alni	266	festiva	280
alsines	273	flava (hellmanni)	268
ambigua	273	flavago = lutea	31, 289
aprilina	139	flavago (ochracea)	269
arcuosa (minima)	268	flavincta	113
areola	214	fulminea (leucophaea)	272
armigera (obsoleta)	248	fulva (pygmina)	268
atriplicis	190	fulvago	27
aurago	33	furcifera (conformis)	222
auricoma	266	genistae	210
batis	265	gilvago	41
bicruris (capsincola)	85, 291	glauca	178
brassicae	272	gothica	283
brunneata	280	gracilis	282
caesia	96	graminis	273
capsincola = bicruris	85, 291	griseo-variegata (piniperda)	281
carpophaga = lepida	77, 291	hellmanni (flava)	268
chenopodii = trifolii	186	helvola	284
chi	108	impura	267
chrysozona (dysodea)	101, 292	incerta	282
circellaris	38, 289	irregularis	75
citrago	24	lepida (carpophaga)	77, 291
clavipalpis (quadripunctata)	273	leporina	266
c.-nigrum	280	leucographa	281
comes	276, 277	leucophaea (fulminea)	272
comma	267	leucostigma	270
concolor (extrema)	268	libatrix	217
conformis (furcifera)	222	lichenea	123
conspersa = nana	93	ligula	8, 287
contigua	207	literosa	271
cordigera	255	lithargyria	267
croceago	21, 289	lucipara	144
cruda (pulverulenta)	284	lunigera (trux)	276, 277
cucubali = rivularis	88, 292	lunosa	284
Cucullia sps.	235-240	lutea (flavago)	31, 289
dentina = nana	181	lutosa	269
diffinis	63	lutulenta	128
dipsacea	244	lychnidis	284
dissimilis	194	macilenta	284
ditrapezium	280	maritima	244

	PAGE		PAGE
matura	272	protea	175
melanopa	257	psi	266
menyanthidis	274	pulverulenta (cruda)	284
meticulosa	143, 293	pygmina (fulva)	268
micacea	270	pyralina	70
minima (arcuosa)	268	quadripunctata (clavipalpis) ...	273
morpheus	273	rectilinea	213
munda	281	retusa	60, 290
myrtilli	251	ripae	277
nana (conspersa)	93	rivularis (cucubali)	88, 292
nana = dentina	151	rubi	280
nebulosa	157	rubiginea	13
neurica	268	rubricosa	262
nictitans (oculea)	269	rumicis	274
nigra	135	rurea	271
nigrescens	277	satellitica = transversa 18, 288,	289
nigricans	276	scolopacina	271
nigrocincta (xanthomista)	111	semibrunnea	221
obsoleta (armigera)	248	serena	104, 292
obsoleta	267	socia	225
occulta	153	solidaginis	231
ocellaris	46	straminea	267
ochracea (flavago)	269	strigosa	274
ochroleuca	73, 291	subtusa	62, 290
oculea (nictitans)	269	taraxaci	273
oleracea	198	templi	116, 292
oo	54, 290	tenebrata	260
opima	282	thalassina	206
orbona	277	tincta	163
ornitopus	218	transversa (satellitica) 18, 288,	289
oxyacanthae	136, 293	trapezina	67, 291
paleacea	58	trifolii = chenopodii	186
pallens	267	trigrammica	273
peltigera	246	trux (lunigera)	276, 277
persicariae	272	umbratica	239, 276
perla	275	umbra	241
pisi	202	vaccinii	1, 286
piniperda (griseo-variegata) ...	281	vetusta	227
plecta	281	viminalis	119
prasina	148	xanthographa	281
pronuba	277	xanthomista (nigrocincta)	111
		xerampelina	50, 290

A large number of additional new Varieties remain to be published.

EXCHANGES.

Subscribers may have Lists of Duplicates and Desiderata inserted free of charge. They should be sent to Mr H. J. TURNER, "Latemar," West Drive, Cheam.

Wanted—*A. vestilialis* from all parts of the British coasts except south: also *R. simulans* and *S. ravida* (*obscura*). Cash or exchange.—A. H. Sperring, Slindon, Fifth Avenue, Warblington, Havant, Hants.

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Wanted—Various monthly parts of *Entomologist's Record* for 1914, 1915, 1916, 1917, 1919, and 1920. Please report any odd monthly parts (in wrappers as issued) prior to these years.—P. B. M. Allan, 4 Windhill, Bishop's Stortford, Herts.

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Wanted—Bristol board suitable for mounting Coleoptera. Also, Puton, A., 1878, "Synopsis des Hémiptères-Hétéroptères de France. Badonnel, A., 1943, *Faune de France*, No. 42, Psocoptères.—H. G. Stokes, 12 Roman Road, Salisbury, Wilts.

For Disposal—*Entomologist's Record*, Vols. 55 (1943) to 59 (1947) in parts, all in good condition. For cash, or in exchange for any of Dr Imms' Textbooks of Entomology including the latest.—Alan M. Maclaurin, Oldhall House, Kilmacolm, Renfrewshire

Wanted—For the British Museum larval collection, larvae of Chrysomelid beetles, alive or preserved. Liberal exchange if required.—Dr S. Maulik, British Museum (Natural History), Cromwell Road, London, S.W.7.

Wanted to Purchase—Pupae in any quantity of any species of moths.—R. M. Rickard, Coningsby, Lincoln.

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Wanted—Distribution Records, Notes on Abundance and Information regarding Local Lists of the Dipterous Families Empididae and Conopidae.—Kenneth G. V. Smith, "Antiopa," 38 Barrow Street, Much Wenlock, Salop.

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Wanted to Purchase—Leech's British Pyrales. Coloured Plate Edition.—A. W. Richards, Nether Edge, Hawley, near Camberley.

MEETINGS OF SOCIETIES.

Royal Entomological Society of London, 41 Queen's Gate, S.W.7: January 19th, 1949 (Annual Meeting), February 2nd, at 5.30 p.m. *South London Entomological and Natural History Society*, c/o Royal Society, Burlington House, Piccadilly, W.1; 2nd and 4th Wednesdays; 6.0 for 6.30. *London Natural History Society*: Tuesdays, 6.30 p.m., at London School of Hygiene or Art-Workers' Guild Hall. Syllabus of Meetings from General Secretary, H. A. Toombs, Brit. Mus. (Nat. Hist.), Cromwell Road, S.W.7. *Birmingham Natural History and Philosophical Society—Entomological Section*: Last Friday in Month, at 7 p.m., at the Birmingham Museum and Art Gallery. Particulars from the Hon. Secretary, G. B. Manly, 72 Tenbury Road, King's Heath, Birmingham, 14.

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Change of Address:—The temporary address of Mr Kenneth J. Hayward of Tucuman will be, as from September, c/o Dept. of Entomology, British Museum of Natural History, London, S.W.7.

Communications received:—Thomas Greer, Fergus J. O'Rourke, O. Querci, H. Donisthorpe, Malcolm Burr, Surg.-Lt. Comm. H. M. Darlow, D. G. Sevastopulo, D. Fearnough, R. J. R. Levett, E. C. S. Blathwayt, E. P. Wiltshire, A. E. Wright.

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